CURTIS'S
BOTANICAL MAGAZINE,

COMPRISING THE

Plants of the Royal Gardens of Kew,

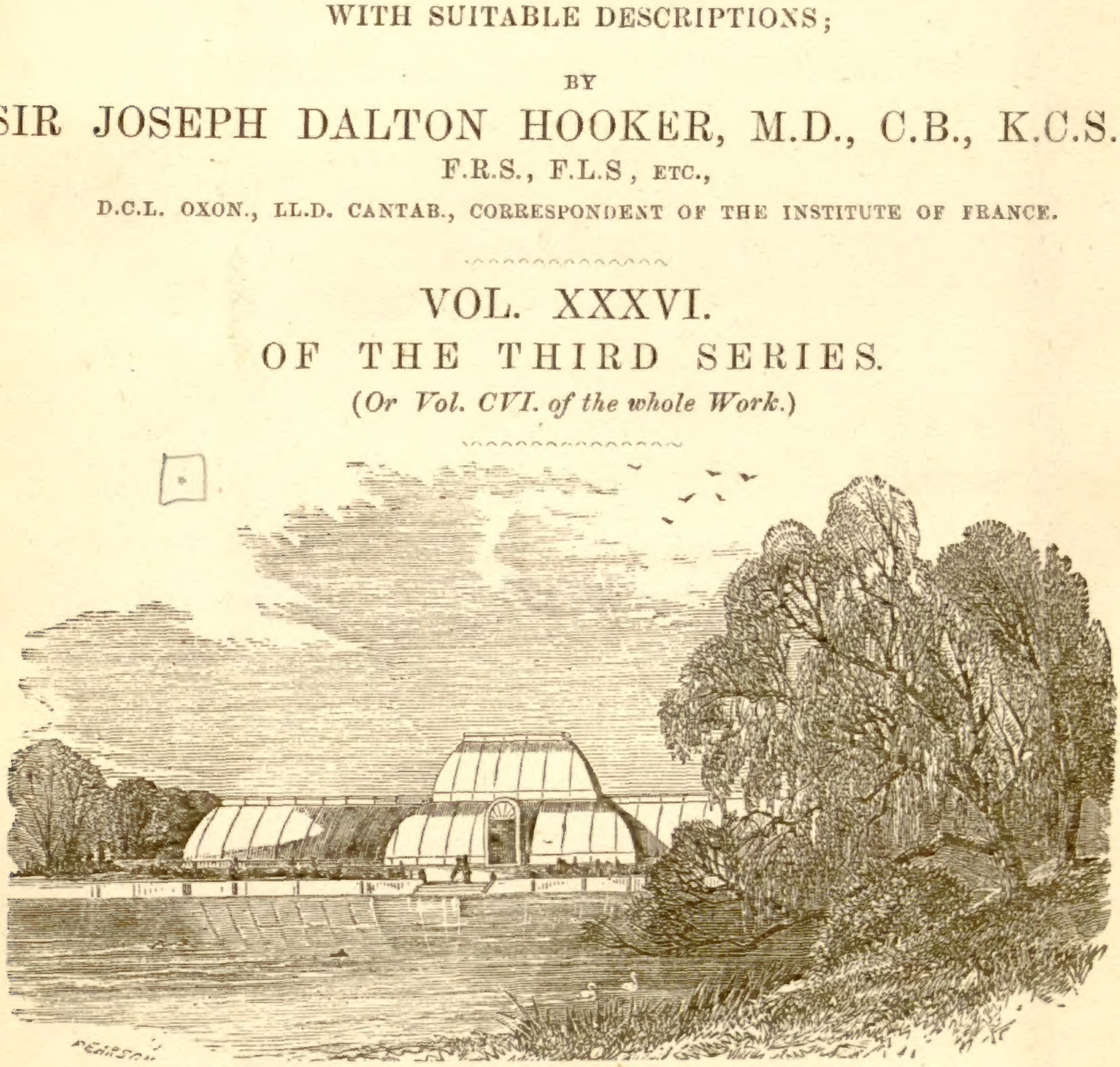
AND

OF OTHER BOTANICAL ESTABLISHMENTS IN GREAT BRITAIN;
WITH SUITABLE DESCRIPTIONS;

BY

SIR JOSEPH DALTON HOOKER, M.D., C.B., K.C.S.I.,
F.R.S., F.L.S, ETC.,
D.C.L. OXON., LL.D. CANTAB., CORRESPONDENT OF THE INSTITUTE OF FRANCE.

VOL. XXXVI.
OF THE THIRD SERIES.
(Or Vol. CVI. of the whole Work.)



"Thou, my love, art perplexed with the endless seeming confusion
Of the luxuriant band which in the garden is spread.
Name upon name thou hearest, and in thy perplexity dreamest,
While with a barbarous clang, one drives another along.
Every form is alike, yet none resembles the other,
Yet is the beautiful whole bound by a mystical bond.
Bound by a mystical bond, O canst thou tell me, my loved one,
What is the fortunate word by which the riddle is read?"—*After Schiller.*

LONDON:
L. REEVE AND CO., 5, HENRIETTA STREET, COVENT GARDEN.
1880.

[*All rights reserved.*]

Mo. Bot. Garden,
1897.

LONDON :
GILBERT AND RIVINGTON, PRINTERS,
ST. JOHN'S SQUARE.

TO

JOHN GILBERT BAKER., ESQ., F.R.S., F.L.S.,

FIRST ASSISTANT IN THE HERBARIUM OF THE ROYAL GARDENS, KEW.

My dear Baker,

I have great pleasure in dedicating to you a volume of the Botanical Magazine, a work which has for several years past profited by contributions from your pen.

I do this the more gladly, because it gives me the opportunity of placing on record my sense of the zeal and efficiency with which you have for so many years conducted your duties in the institution to which we both are attached, and of the cordiality with which you have not only officially aided visitors during their researches in the Herbarium, but unofficially placed at their disposal your great stores of botanical knowledge.

Believe me,

Most sincerely yours,

JOS. D. HOOKER.

Royal Gardens, Kew,

Dec. 1*st*, 1880.

4.

3.

2.

1.

A.B. del. J.N. Fitch Lith

Vincent Brooks Day & Son Imp

Tab. 6469.

BROWNEA Ariza.

Native of New Grenada.

Nat. Ord. Leguminosæ.—Tribe Amherstieæ.

Genus Brownea, *Jacq.*; (*Benth. et Hook. f. Gen. Pl.* vol. i. p. 577.)

Brownea *Ariza;* ramulis rachi foliorum foliolisque glaberrimis, petiolulis villosis glabratisve, foliis 6–8-jugis oblongo-lanceolatis abrupte caudato-acuminatis membranaceis subtus glaucis basi angustato inæquali obtuso, jugorum inferiorum foliolis brevioribus basi cordatis, floribus dense spicato-capitatis, capitulis 7 poll. diam., bracteolis connatis extus sericeis calycis tubo multo longioribus, petalis sepalis duplo longioribus obovato-oblongis obtusis longe gracile unguiculatis, filamentis petala subæquantibus 11 ad basin fere liberis glaberrimis, ovario molliter sericeo, stylo glaberrimo.

B. Ariza, *Benth. Pl. Hartweg.* p. 170.

B. Princeps, *Linden Catalogue*, 1877, No. 98, p. 33.

When for the first time a *Brownea* flowered in this country (in the Edinburgh Botanical Garden in 1842), it was said of it, "Few things can exceed the elegance, or the richness of the colouring in the beautiful flowers of this shrub" (Graham in Bot. Mag. t. 3964). This applied to *B. coccinea*, now considered by far "the poorest thing" of the genus that has hitherto been cultivated in England, its heads of flowers being little over two inches in diameter. It was succeeded by *B. grandiceps* (flowered in 1855), which was pronounced, "Although far inferior in point of richness of colour of the flowers to *B. coccinea*, yet the quantity of flowers collected into an almost globose head nearly eight inches in diameter, gives this infinitely the advantage over that species" (Bot. Mag. t. 4839). Of *B. Ariza*, the third species that has flowered, it may truly be said, that it combines with the size of head of *B. grandiceps* the vivid colouring of *B. coccinea*.

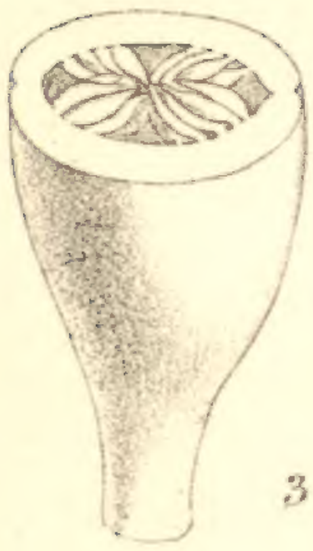
Brownea Ariza is a native of New Grenada, having been discovered, about the year 1842, by the late Theodor Hartweg, in forests of the province of Bogota, at an elevation of 1400 feet above the sea, where it is called the Ariza by the inhabitants; it was not however introduced by that traveller

into cultivation, though so stated by Paxton. The splendid specimen here figured was flowered by the late deeply-lamented Dr. Moore of Glasnevin, who was also the first to flower *B. grandiceps*. In a letter received with the plant from him in March of last year, he informed me that he received it from the Continent (presumably from Mr. Linden) under the name of *B. Princeps;* that it was then fourteen feet high, and flowered profusely every year. In another letter of later date he says, "Although the individual bunches of flowers are rather smaller than those of its rival *B. grandiceps*, their brilliant colour far surpasses it. Both are in flower here at present, *B. grandiceps* with upwards of fifty flowering bunches on it."

The *Brownea Ariza* of Paxton's Flower Garden, vol. ii. p. 59 (1851–2), copied in Lemaire's "Jardin Fleuriste," t. 1942, is a totally different plant from this, and apparently *B. grandiceps*.

Descr. A tree thirty to forty feet high; branches glabrous, and petiole and rachis of leaf covered with brown shining bark, bearing small scattered smooth warts. *Leaves* one foot and more long; rachis slender, bearing leaflets to the very base, there swollen into an oblong nob; leaflets six to eight pairs, four to seven inches long, quite glabrous, membranous, glaucous beneath, uppermost pair the longest, oblanceolate, caudate-acuminate, narrowed to a rounded obtuse unequal base, the lowest pair much the shortest, cordate at the base; petiolules very short, tumid, densely villous, at length glabrous. *Flowers* most densely spicate on a stout silky columnar rachis two inches long, forming a globose head of scarlet bracts sepals and petals six inches in diameter; outer bracts coriaceous, pubescent, orbicular-reniform, one to one and a half inches in diameter; inner spathulate or oblanceolate, membranous, silky, as long as the flowers; bracteoles connate into a silky spathe enclosing the flower for more than half its length. *Flowers* two inches long. *Calyx-tube* sessile, glabrous, obconic. *Sepals* obovate-spathulate, more than half as long as the obovate-oblong obtuse petals, which have long slender claws. *Stamens* eleven; filaments free almost to the base, glabrous. *Ovary* densely villous with silky hairs; style glabrous.—*J. D. H.*

Fig. 1, section of flower and bracteolar spathe; 2 and 3, stamens; 4, stigma:—*all enlarged.*



3

TAB. 6470.

GENTIANA KURROO.

Native of the Himalaya Mountains.

Nat. Ord. GENTIANEÆ.—Tribe SWERTIEÆ.

Genus GENTIANA, *Linn.*; (*Benth. et Hook. f. Gen. Pl.* vol. ii. p. 815.)

GENTIANA (Pneumonanthe) *Kurroo*; glaberrima, radice elongato crasso apice folioso, foliis subrosulatis anguste elongato lineari-oblongis v. lanceolatis obtusis v. subacutis coriaceis 1–3-nerviis, ramis floriferis e collo ascendentibus v. basi prostratis 1–5-floris, foliis caulinis linearibus, calycis tubo infundibari-campanulato, lobis 5 basi discretis linearibus tubum æquantibus v. superantibus, corolla calyce duplo longiore campanulata lobis late ovatis acutis azureis albo conspersis plicis inter lobos integris dentatis v. furcatis.

G. Kurroo, *Royle Ill. Himal. Pl.* 278, t. 68, f. 2; *Griseb. in DC. Prodr.* vol. ix. p. 110.

Pneumonanthe Kurroo, *Don in Phil. Mag.* 1836, p. 75, *et in Trans Linn. Soc.* vol. xvii. p. 510.

A frequent inhabitant of the western temperate Himalaya, from Garwhal westward to Kashmir, at elevations of 5000 to 8000 feet, where it is one of the most ornamental of the herbaceous perennials from the delicacy of its azure blossoms sprinkled with pearly white, and the brilliant green of its foliage. It is a near ally of the British *G. Pneumonanthe*, but a far handsomer plant. According to Dr. Royle, its native name in Garwhal is "Kurroo," and it is used as a medicine, no doubt from the bitter properties of the root.

I am indebted to Mr. Bull for the beautiful specimen here represented, which he raised from seed, and flowered in October of last year. It had not before been introduced into cultivation, and will prove a very great acquisition to the rock-garden.

DESCR. *Root* as thick as the middle finger, and cylindrical when old, sometimes five to six inches long, covered with black rough bark, the crown bearing many tufts of leaves that spread horizontally. *Leaves* three to five inches long,

elongate linear- or oblong-lanceolate, obtuse or acute, one-sixth to nearly one inch in diameter, concave, very coriaceous, bright green, midrib thick with sometimes a lateral very obscure nerve on each side; cauline leaves numerous, narrowly linear, one-half to two inches long. *Flowering stems* ascending from the crown below the leaves, sometimes prostrate for half their length, four to eight inches long, stout or slender, one to four flowered. *Flowers* erect or inclined, pedicelled, one and a half inches long. *Calyx-tube* between funnel- and bell-shaped, about one-third the length of the corolla-tube; lobes as long as the tube, narrow linear, remote at the base. *Corolla-tube* narrowly campanulate; limb one and a half inches in diameter; lobes five, broadly ovate, acute or acuminate, azure-blue, sprinkled towards the throat with white; folds between the lobes very variable, membranous, quadrate and toothed or cut into subulate processes, or almost entire. *Filaments* stout; anthers small. *Ovary* pedicelled, spindle-shaped, contracted into a short style with short oblong finally spreading stigmas. *Ovules* fusiform, produced at the apex.—*J. D. H.*

Fig. 1, vertical section of flower; 2, summit of ovary, style, and stigmas; 3, transverse section of ovary; 4, ovules:—figs. 2–4 *enlarged*.

A.B. del. J.N. Fitch Lith

Vincent Brooks Day & Son Imp

Tab. 6471.

PACHYSTOMA? Thomsonianum.

Native of Western Tropical Africa.

Nat. Ord. Orchideæ.—Tribe Epidendreæ?

Genus Pachystoma? *Blume;* (*Reichb. f. in Walp. Ann.* vi. 462.)

Pachystoma? *Thomsonianum;* rhizomate elongato, pseudobulbis depressis orbiculatis tunicatis 1-foliatis, folio anguste elliptico-lanceolato utrinque acuminato membranaceo plicato, pedunculis a basi pseudobulbi ascendentibus folio brevioribus gracilibus pubescentibus 2-floris, spathis 1 v. 2 ovato-lanceolatis, bracteis spathaceis subacutis ovario brevioribus, perianthio explanato, sepalis albis, dorsali majore erecto oblongo-lanceolato acuminato marginibus infra medium recurvis, 2 lateralibus patenti-decurvis elongato-lanceolatis acuminatis apicibus recurvis, petalis albis horizontaliter patentibus sepalis lateralibus æquilongis acuminatis, labelli lobis lateralibus erectis subquadratis carnosis cochleatis intus rubro striolatis intermedio elongato triangulari in caudam elongatam sensim producto rubro-striato, columna suberecta apice rotundato, anthera deflexa cuneato-lanceolata, polliniis 8 parvis caudiculis elongatis connatis, glandula parva trigona.

P. Thomsonianum, *Reichb. f. in Gard. Chron.* 1879, ii. 582.

I am quite unable to refer this beautiful little plant to any other described genus of Orchids than that in which Prof. Reichenbach has placed it, and shall leave it for Mr. Bentham to settle its position as he elaborates the genera of Orchideæ for the "Genera Plantarum," a work upon which he is now engaged. Neither in habit nor in floral characters does it appear to me to accord with *Pachystoma;* and if the figure of the pollinia here given is correct, and I have no reason to doubt this (having supervised the artist when making the drawing and its analyses), it must be referred to the Tribe *Vandeæ*, as now accepted, and not to the *Epidendreæ*, to which the described species of *Pachystoma* truly belong. I think, however, it is a question how far the presence or absence of the so-called gland is of itself a safe ground on which to divide the *Epidendreæ* from the *Vandeæ*, more especially when it is considered that this appendage to the base of the pollen masses is formed of a portion of the column (the rostellum) that varies greatly in its nature and extent in different genera, so that Mr. Darwin remarks, that "the differences in the shape and size of the removed por-

tions of the rostellum can be finely graduated together, even within the single tribe of *Vandeæ*; and still more closely by commencing with the minute oval atom of membrane to which the caudicle of *Orchis* adheres, passing thence to *Habenaria bifolia* to that of *H. chlorantha* with its drum-like pedicel, and thence through many forms to the great disc and pedicel of *Cataseta*." If the transition steps in the development of the appendages to which the pollinia attach themselves, can be thus traced from plants so different in this respect as *Orchis* and *Catasetum*, how much easier must that be from *Epidendreæ* to *Vandeæ*!

The subject of the present plant is a very lovely one; its graceful form, and the purity and brilliancy of its white, and the vividness of its reds, render it one of the most beautiful Orchids of its type and habit, which remind one a good deal of some Celogynes. It was sent from the west coast of tropical Africa (probably Old Calabar) by Mr. W. Kalbreyer, who desired that it should commemorate the services of the late G. Thomson, a well-known resident on that pestilent coast. I am indebted to Mr. Veitch for the loan of the specimen here figured, which flowered at the Royal Exotic Nurseries in October, 1879.

Descr. *Pseudo-bulbs* seated on a running rhizome, one inch in diameter, orbicular, depressed, covered with membranous scales. *Leaf* solitary, six to eight inches long, lanceolate, acuminate, membranous, plaited. *Peduncles* one or two from the base of each pseudo-bulb, ascending, slender, pubescent, with one or two spathes, two-flowered; bract sheathing, subacute. *Flower* three to three and a half inches across the petals; perianth widely spreading. *Sepals* and *petals* pure white; dorsal sepal erect, oblong-lanceolate, acuminate, margins reflexed below the middle; lateral sepals smaller and narrower. *Petals* horizontal, lanceolate, acuminate. *Lip* trifid, side-lobes erect, conchoid, subquadrate, streaked with red inside; mid-lobe elongate-triangular, one inch long, gradually tapering to a recurved point, white with broad red streaks. *Column* arched, semi-terete, green streaked with red. *Anther* deflexed, ovate-lanceolate, obtuse. *Pollinia* eight in two bundles, small, pyriform, their caudicles united into one thick one seated on a small gland.—*J. D. H.*

Fig. 1, flower with sepals and petals removed; 2, column and lip; 3, anther; 4, pollinia:—*all enlarged.*

Tab. 6472.

POLYGONUM affine.

Native of the Himalaya.

Nat. Ord. Polygonaceæ.—Tribe Eupolygoneæ.

Genus Polygonum, *Linn.*; (*Benth. et Hook. f. Gen. Pl.* vol. iii. p. 97 [ined.].)

Polygonum (Bistorta) *affine*; caule humili prostrato ligno hypogo ramoso, ramis brevibus fasciculatis, foliis plerisque radicalibus anguste elliptico-lanceolatis v. oblanceolatis obtusis v. acutis in petiolum brevem v. elongatum angustatis marginibus recurvis crispato-crenulatis tenuiter reticulatim venosis, caulinis parvis elliptico-lanceolatis acutis sessilibus, caulibus floriferis erectis 4–8 pollicaribus foliosis, racemis spiciformibus solitariis cylindraceis compactis, floribus roseis, perianthii explanati segmentis ellipticis v. obovatis obtusis, filamentis 8 stylisque 3 filiformibus.

P. affine, *Don Prodr.* p. 70; *Babingt. in Trans. Linn. Soc.* vol. xviii. p. 97.

P. Donianum, *Spreng. Syst., Cur. Post.* p. 154.

P. Brunonis, *Wall. Cat.* 1692; *Royle Ill. Pl. Himal.* p. 317, t. 80; *Meissn. in Wall. Pl. As. Rar.* vol. iii. p. 54; *Paxt. Fl. Gard.* t. 37; *Lemaire Jard. Fleur.* t. 117.

The erect herbaceous perennial *Polygona* of the section *Bistorta*, form one of the most beautiful features of the sub-Alpine Himalayan Flora, ornamenting the wet river banks and meadows, where growing amongst the grass they contribute much to the herbage, or hanging in rosy clumps from the moist precipices. *P. affine* is one of the latter set; it abounds in the Himalayan valleys from Kumaon westward to Kashmir, growing at elevations of 9,000 to 14,000 feet, but has not been found in Nepal, as often stated. In the Eastern Himalaya and in the Khasia Mountains it is replaced by *P. paleaceum*, Wall., a plant not recorded in Meissner's monograph of the genus in De Candolle's Prodromus, and which is perhaps referable to his *P. sphærostachyum*. Another and a very beautiful ally of these is *P. vaccinifolium*, Wall. (tab. nostr. 4622), which is one of the most ornamental rock-plants ever introduced into this country.

Polygonum affine has been long cultivated at Kew, and flowers freely in the open border in September and October.

January 1st, 1880.

It was introduced into England in about 1845, I believe, through the late Dr. Royle's collectors, who were attached to the Saharumpore Gardens.

Descr. Quite glabrous. *Rootstock* woody, tufted, prostrate, branched, tip covered with the brown withered stipular sheaths, sending up several erect flowering stems and occasional prostrate leafy shoots. *Leaves* chiefly radical, two to four inches long, oblanceolate or elliptic-oblong, acute or obtuse, narrowed into a long or short and slender petiole; margins recurved and minutely wrinkled, almost crenulate; nerves reticulate; stipules elongate, entire or sparingly split; cauline leaves much smaller, sessile, elliptic. *Flowering stems* six to eight inches high, stout or slender. *Flowers* in solitary terminal cylindric obtuse spiciform racemes, two to three inches long, by half to two-thirds of an inch in diameter, crowded; bright rose-red, concealing the membranous obtuse sheathing stipuliform bracts; pedicels fascicled often in fours, filiform, curved, rigid. *Perianth* one-sixth to one-fourth of an inch broad; tube very shortly obconical; segments broadly elliptic or obovate. *Stamens* eight, filaments filiform, equalling the perianth. *Ovary* trigonous; styles three, filiform; stigma punctiform.—*J. D. H.*

Fig. 1, vertical section of flower; 2, stamen; 3, ovary; 4, ovule:—*all enlarged*.

A.B. del J.N. Fitch Lith

Vincent Brooks Day & Son Imp

L Reeve & Co. London

TAB. 6473.

A. NARCISSUS PALLIDULUS.
B. NARCISSUS GRAELLSII.
C. NARCISSUS RUPICOLA.

Natives of Spain.

Nat. Ord. AMARYLLIDACEÆ.—Tribe NARCISSEÆ.

Genus NARCISSUS, *Linn.*; (*Baker in Gard. Chron.* 1869, p. 416.)

A. NARCISSUS (Ganymedes) *pallidulus;* bulbo parvo ovoideo, folio unico angustissime lineari glaucescente synanthio, scapo gracillimo tereti 1–2-floro, floribus cernuis longe pedicellatis, perianthii pallide sulphurei tubo elongato subcylindrico, segmentis lanceolatis, reflexis tubo subæquilongis, coronâ cyathiformi pallide sulphurea segmentis paulo breviori ore integro, staminibus 3 cum stylo exsertis.

N. pallidulus, *Graells Ramill.* vol. i. p. 20, t. 8; *Willk. et Lange Prodr. Flor. Hisp.* vol. i. p. 153.

N. triandrus, *Baker in Gard. Chron.* 1869, p. 686, *ex parte.*

B. NARCISSUS (Corbularia) *Graellsii;* bulbo globoso, foliis 2-4 anguste linearibus synanthiis, scapo brevi tereti unifloro, flore suberecto breviter pedicellato, perianthii pallide sulphurei tubo elongato infundibulari, segmentis lanceolatis laxe ascendentibus tubo brevioribus late viridi vittatis, coronâ sulphurea late cyathiformi segmentis æquilonga ore crenulato, staminibus omnibus cum stylo exsertis.

N. Graellsii, *Graells Pl. Hor.* p. 8; *Ramill.* t. 5; *Willk. et Lange Prodr. Fl. Hisp.* vol. i. p. 150.

Corbularia Graellsii, *Webb in Bourg. Pl. Hisp. Exsic.* No. 2281.

C. NARCISSUS (Queltia) *rupicola;* bulbo subgloboso, foliis 2–4 anguste linearibus glaucescentibus synanthiis, scapo tereti unifloro, flore erecto brevissime pedicellato, perianthii lutei tubo elongato subcylindrico, segmentis oblongis cuspidatis, tubo duplo, brevioribus flore expanso patulis, coronâ brevi aurantiaca ore profunde 6-lobato, stylo incluso, antheris subsessilibus.

N. rupicola, *Dufour in Roem. et Schultes Syst. Veg.* vol. vii. p. 958; *Graells Ramill.* vol. i. p. 17, t. 7; *Willk. et Lange Prodr. Fl. Hisp.* vol. i. p. 152.

N. apodanthus, *Boiss. et Reut. Diag.* p. 25.

These are three Narcissi that stand widely apart from one another in their botanical characters, but which we have grouped together because they come from the same

country, and flower about the same time. They are all natives of the mountains of Central Spain, at an elevation above sea-level of from two thousand to four thousand feet; and are all three figured in the "Ramilletes de Plantas Espanolas" of Graells, published at Madrid in 1859. For the specimens here drawn we are indebted to Mr. G. Maw, who has cultivated them successfully at Broseley, and distributed bulbs with his usual liberality. In their native mountains they flower in April; *rupicola*, which ascends higher than the two others, reaching over into June.

Descr. *N. pallidulus*. *Bulb* ovoid, about half an inch in diameter, with a cylindrical sheath produced less than an inch above its neck. *Leaf* single, suberect, very narrow, glaucescent, channelled down the face, as long as the scape. *Scape* very slender, terete, half a foot or a foot long, bearing one or two drooping flowers on elongated pedicels. *Perianth* pale sulphur-yellow; tube subcylindrical, half or three-quarters of an inch long; segments lanceolate, reflexed, as long as the tube; corona cyathiform, the same colour as the perianth, rather shorter than the segments, truncate at the throat. Three longer *stamens* and the *style* a little exserted from the corona; the three other anthers nearly sessile at the throat of the perianth-tube.

N. Graellsii. *Bulb* globose, half or three-quarters of an inch in diameter, with a cylindrical sheath produced an inch above its neck. *Leaves* two or four to a bulb, narrow linear, often overtopping the flower. *Scape* one to three inches long, always bearing only a single suberect flower, on a very short pedicel. *Perianth* pale sulphur-yellow; tube funnel-shaped, half or three-quarters of an inch long; segments lanceolate, loosely ascending, not more than half as long as the tube, furnished with a broad keel of green, which runs down the tube. *Corona* cyathiform, about half an inch long and broad, the same colour. *Stamens* and *style* declinate, all about the same length, and protruded from the corona.

N. rupicola. *Bulb* ovoid or subglobose, half or three-quarters of an inch in diameter, with a cylindrical sheath

produced an inch above its neck. *Leaves* two or four to a bulb, narrow linear, glaucescent, about as long as the scape. *Scape* slender, terete, a quarter or half a foot long, bearing a single erect flower on a very short pedicel. *Perianth* bright lemon-yellow; tube subcylindrical, greenish, half or three-quarters of an inch long; segments oblong, spreading, cuspidate, half as long as the tube. *Corona* cup-shaped, orange-yellow, less than half as long as the perianth-segments, the throat with three deep rounded dentate lobes. *Anthers* all six nearly sessile in the perianth-tube. *Style* much shorter than the perianth-tube.—*J. G. Baker.*

Fig. 1, section of a flower of *N. pallidulus;* 2, section of a flower of *N. Graellsii;* 3, section of a flower of *N. rupicola*:—*all enlarged.*

1.

2

A.B. del. J.N. Fitch. Lith.

Vincent Brooks Day & Son Imp.

Tab. 6474.

ARISÆMA UTILE.

Native of the Sikkim Himalaya.

Nat. Ord. Aroideæ.—Tribe Arisareæ.

Genus Arisæma, *Mart.*; (*Schott. Prodr. Syst. Aroid.* p. 24.)

Arisæma (Trisecta) *utile*; dioicum, foliis 2-nis 3-foliolatis, petiolo robusto viridi, foliolis subsessilibus v. breviter crasse petiolulatis patentibus lateralibus late ovatis v. triangulari-ovatis terminali transverso late oblongo, omnibus cuspidatis marginibus flavidis creberrime undulatis, nervis purpurascentibus subtus prominulis, pedunculo petiolo multo breviore viridi, spatha 5–6-pollicari, tubo cylindraceo brunneo multi-costato costis virescentibus, lamina decurva ampla 3–4-poll. lata brunnea cruciatim crasse venosa venis virescentibus apice rotunda'a v. emarginata v. 2-loba medio cuspidata, spadicis masculi parte florifera pallide purpurascente, antheris sparsis 4-locularibus longe stipitatis, parte sterili elongato conico basi ampliato lobulato apice in filum longissimum filiforme purpureum desinente, spadicis fœminei parte florifera conica ovariis ovoideis dense operta, stylis crassis.

A. utile, *Hook. f. mss. Schott, Prodr. Syst. Aroid.* 30; *Engler in A. DC. Monogr. Phanerog.* vol. ii. p. 537.

Under *A. nepenthoides* (tab. 6446) I stated that several other Himalayan species of this genus remained to be published from figures made from specimens introduced into cultivation by Messrs. Elwes, Gammi, King, &c., and that amongst them was the *A. utile*. This, on account of its being the most common of those of which the tubers are collected for food by the hill tribes of Sikkim, is the most interesting species of the genus, though it falls short in stature of the *A. Hookerianum*, a figure of which will shortly appear in this work. *A. utile* is the plant specially alluded to in the following extract from the "Himalayan Journals," vol. ii. p. 49:—"My tent was pitched on a broad terrace, opposite the junction of the Zemu and Thlonok, and 10,850 feet above the sea. It was sheltered by some enormous transported blocks of gneiss, fifteen feet high, and surrounded by a luxuriant vegetation of most beautiful rhododendrons in full flower, willow, white rose, white-flowered cherry, thorn, maple, and birch. Some great tuberous-rooted *Arums* were very abundant; and the ground was covered with small pits, in which were large wooden pestles: these are used in the preparation of food from the *Arums*, to which the miserable inhabitants of the valley have recourse in spring when their yaks are calving. · The roots

are bruised with the pestles, and thrown into these holes with water. Acetous fermentation commences in seven or eight days, which is a sign that the acrid poisonous principle is dissipated: the pulpy, sour, and fibrous mass is then boiled and eaten; its nutriment being the starch which exists in small quantities, and which they have not the skill to separate by grating and washing. This preparation only keeps a few days, and produces bowel complaints, and loss of the skin and hair, especially when insufficiently fermented. Besides this, the 'choklibi' (*Tovaria olevacea*, tab. 6313), and many other esculents, abounded here; and we had great need of them before leaving this wild uninhabited region."

The drawing here published was made from a specimen sent to me by H. J. Elwes, Esq., F.L.S., of Preston House, Cirencester, who himself introduced it from Sikkim; it flowered at the same time (June 14, 1879) in the Royal Gardens, from roots presented by Mr. Elwes. The species is common in the forests of Sikkim, at elevations of 8000 to 12,000 feet, flowering in May and June.

Descr. *Tubers* as large as a walnut, or larger. *Leaves* in pairs from the roots; petiole a foot long, and as thick as the middle finger, cylindric, green; leaflets three, all very shortly stoutly petiolulate or sessile, bright green with yellowish wrinkled margins and purplish nerves which are very prominent beneath; middle leaflets broader than long, five to eight inches in diameter, cuspidate, base cuneate; lateral leaflets trapezoid-ovate, acute or cuspidate. *Peduncle* much shorter than the petiole, as stout, green. *Tube of spathe* three to four inches long, red-brown with greenish ribs; lamina decurved, rarely suberect, much dilated, three to four inches across, red-brown, diagonally barred with raised green broad veins, middle portion tumid with parallel ribs, apex deeply lobed or emarginate, with a cusp in the sinus. *Male spadix;* flowering portion columnar, pale purple with scattered stipitate four-celled anthers; naked portion (or appendix) dirty purple, elongate, conical, dilated and lobed at the base, the apex terminating in a purple filiform tail eight inches long, which in the young state of the plant is enclosed in one of the segments of the leaf. *Female spadix* with a much stouter conical flowering portion thickly covered with ovoid ovaries, ending in short thick styles.—*J. D. H.*

Fig. 1, plant reduced; 2, male spadix of the *natural size*.

5

4.

3

6

2

1.

A.B. del J.N.Fitch Lith.

Vincent Brooks Day & Son Imp.

L. Reeve & Co. London

Tab. 6475.

CALOCHORTUS Benthami.

Native of California.

Nat. Ord. Liliaceæ.—Tribe Tulipeæ.

Genus Calochortus, *Parsh.* (*Baker in Journ. Linn. Soc.* vol. xiv. p. 302.)

Calochortus (Macrodenus) *Benthami;* bulbo ovoideo, tunicis exterioribus firmis brunneis supra collum productis, folio proprio unico lineari supra caulis basin inserto inflorescentiam eminente, floribus 3–6 laxe corymbosis, pedicellis elongatis basi foliis reductis bracteatis floriferis ascendentibus fructiferis cernuis, perianthii lutei segmentis exterioribus pallidioribus oblongis acutis glabris, interioribus obovatis vel orbicularibus aurantiacis basi cuneatis facie ubique pilis glanduliferis vestitis supra basin conspicue foveolatis, antheris linearibus apiculatis filamento æquilongis, ovario oblongo, stigmatibus sessilibus falcatis, capsulis oblongis lobis tribus profundis acutis angustis.

C. Benthami, *Baker in Journ. Linn. Soc.* vol. xiv. p. 304; *S. Wats. in Proc. Amer. Acad.* vol. xiv. p. 262.

Cyclobothra elegans var. lutea, *Benth. Pl. Hartweg.* p. 338.

Calochortus nitidus, *Wood in Proc. Acad. Philad.* 1868, p. 169, *non Dougl.*

This little *Calochortus* is a close ally of *C. elegans*, which is pretty well known in English gardens, but differs by its yellow flowers. For garden purposes the species of this *Macrodenus* section are not so effective as the larger more open-flowered Mariposas, such as *venustus*, *luteus*, *citrinus*, and *splendens*, but the flowers are less fugitive. The present species is an inhabitant of the Sierra Nevada chain of mountains in California. It was first gathered by Hartweg in the year 1848, and has since been distributed by Fremont, Lobb, and other collectors. We first received it alive from Mr. Elwes in 1877. The drawing was made from a plant that flowered with Dr. Wallace at Colchester in June, 1879.

Descr. *Bulb* ovoid, about an inch in diameter, with firm brown outer tunics produced some distance above its neck. *Stem*, including inflorescence, rising half a foot to a foot above the surface of the soil. *Leaf* single, linear, glabrous,

green, six or twelve inches long, inserted on the stem a short space above its base, much overtopping the flowers. *Flowers*, three to six in a lax corymb; pedicels long, flexuose, erect when the flower expands, nodding in the bud stage and in fruit, subtended each by a large linear bract similar to the leaf in texture. *Perianth* nine or ten lines long, bright yellow; outer segments lemon-yellow, oblong, acute, glabrous, furnished sometimes with a claret-brown spot at the base; inner segments obovate or suborbicular, cuneate at the base, orange-yellow, clothed all over the face with concolorous glandular hairs, and each furnished at the base with a conspicuous gibbous claret-brown foveole. *Stamens* as long as the ovary; anthers lemon-yellow, linear, cuspidate, equalling in length the flattened filaments. *Ovary* oblong, about a third as long as the perianth, furnished at the apex with three small falcate sessile stigmas. *Capsule* oblong, half or three-quarters of an inch long, with three deep acute lobes.—*J. G. Baker.*

Fig. 1, section of an entire flower; 2, 3, glandular hairs from the face of the petals; 4, a single stamen; 5, horizontal section of the ovary; 6, pistil, taken from a bud:—***all more or less enlarged.***

A B del J.N.Fitch Lith.

Vincent Brooks Day & Son Imp

POLYGONUM COMPACTUM.

Native of Japan.

Nat. Ord. Polygonaceæ.—Tribe Polygoneæ.

Genus Polygonum, *Linn.*; (*Benth. et Hook. f. Gen. Pl.* vol. iii. p. 99, *ined.*)

Polygonum (Pleuropterus) *compactum*; caulibus decumbentibus, ramis suberectis rigidis sulcatis foliosis, foliis glabris breviter petiolatis late ovatis breviter cuspidatis rigidis basi late truncato-cordatis, marginibus undulatis, nervis subtus reticulatis, ochreis brevissimis deciduis, racemis axillaribus et terminalibus erectis strictis gracilibus simplicibus multifloris puberulis, floribus confertis, bracteis minutis obtusis multifloris, pedicellis capillaribus basin versus articulatis, perianthio fructifero cuneato, segmentis 3 exterioribus auctis carina dorsali in alam latam in pedicello desinentem expansa, stigmatibus 3.

P. cuspidatum, *Sieb. et Zucc., var.* compactum, *Hort.*

The Japanese and N. Chinese Polygonums of the section *Pleuropterus*, are amongst the most ornamental herbaceous plants of the garden; some of them, as *P. cuspidatum* and *Sachaliense*, throwing up, in the summer time, branches so numerous, long (often eight feet high), and strong, as to become truly bushes. They are of graceful habit, easily grown, perfectly hardy, and increase by underground suckers with such rapidity that the larger sorts are apt to prove troublesome monopolists of the soil. Of these Polygonums the two named above are commonly cultivated, and both are erect; a third is a climber, the *P. multiflorum*, Thunb. To these must be added the subject of the present plate, which has long been cultivated at Kew under the name of *P. compactum*, and which, though closely allied to *P. cuspidatum*, and possibly a form of it, differs in its dwarf size, decumbent lowly habit, small rigid leaves with waved margins, and strict erect simple female racemes. Like all its near allies, as far as I have observed them, it is diœcious, the male plants having stamens which are longer than the perianth, and a minute rudiment of an ovary without stigmas, and the females having very short stamens

with imperfect anthers without pollen, and a well-formed trigonous ovary bearing three short stigmas fimbriate at the apex. Besides the form figured here, a similar one in habit and foliage is grown at Kew, with the flowers all male, rose-coloured, much more loosely racemose, and with a tendency in the racemes to throw out very short lateral branches: this plant I suspect to be the male of *P. compactum*.

The only specimen of *P. compactum* which I have found in the Kew Herbarium were fruiting ones collected on the mountain Fusiyama, received from Sir R. Alcock, K.C.B., in 1860, from whom, in all probability, the seeds also were procured; like all its allies, it flowers very late in the season, the specimen figured being in blossom almost till the end of September.

Descr. *Stems* prostrate, one to two feet long, with ascending and suberect branches as high, deeply grooved, dark red or red-brown, puberulous towards the tips, as are the petioles and racemes. *Leaves* one and a half to two inches long and broad, rigid, deltoid or very broadly ovate, base broadly truncate or subcordate with a very open sinus, cuspidate, margins waved, uppermost sometimes cuneate at the base; petiole a quarter to half an inch long, stout, red; ochrea very short, deciduous. *Racemes* axillary and terminal, two to three inches long, strict, erect, solitary or several together; rachis slender with close-set short obtuse many-flowered bracts. *Male flowers* white, on slender pedicels; perianth one-tenth of an inch long, subglobose; fruiting perianth one-third of an inch long, cuneate, truncate; three outer segments with a broad membranous longitudinal dorsal wing produced downwards on the pedicel. *Stamens* eight, imperfect, filaments half as long as the perianth; anthers small, without pollen. *Ovary* ellipsoid, trigonous; stigmas three, short, truncate, tips fimbriate.—*J. D. H.*

Fig. 1, fruiting perianth of female flower; 2, the same laid open, showing the stamens and ovary, *both enlarged;* 3, fruiting raceme *of the natural size.*

Tab. 6477.

MAXILLARIA porphyrostele.

Native of South Brazil.

Nat. Ord. Orchideæ.—Tribe Vandeæ.

Genus Maxillaria, *Ruiz et Pav.*; (*Lindl. Gen. et Sp. Orchid.* p. 150.)

Maxillaria (Unifloræ) *porphyrostele;* acaulis, pseudobulbis ovoideo-orbiculatis compressis subsulcatis lateribus obtusis, foliis 2 ligulatis obtusis basi angustatis, scapis radicalibus 1-floris, bracteis vaginantibus viridibus subacutis inferne imbricatis supremo subcucullato obtuso ovarium subæquante, sepalis subacutis incurvis stramineis dorsali oblongo vix fornicato, lateralibus subdeflexis basi latioribus, petalis angustioribus ascendentibus incurvis linearibus subacutis stramineis medio basin versus purpurascente, mento obtuso, labello trilobo, lobis lateralibus auriculæformibus erectis marginibus incurvis aureis purpureo striatis, intermedio orbiculari-oblongo obtuso planiusculo basi callo tuberculæformi aucto pallide aureo, columna purpurea.

M. porphyrostele, *Reichb. f. in Gard. Chron.* 1873, p. 978.

A native of the Rio Grande de Sul province of Brazil, whence it was imported by Mr. Bull, with whom it first flowered in 1873. Its nearest ally is the *M. picta*, Hook., figured at Tab. 3154 of this work, a native of the Organ Mountains (Rio de Janeiro), and which differs in the pseudo-bulbs, fewer bracts, and in the colouring of the much larger very sweet-scented flowers. Both belong to the largest section of the genus, many of which have a good deal the habits of Indian Cœlogynes, which genus *Maxillaria* in some respects represents in America. Reichenbach describes the pseudo-bulbs of this species as covered with numerous wrinkles, which not being the case in the specimen here figured, is probably due to a want of ripening, or to a too advanced state of that organ, which in a healthy condition is perfectly smooth. The flowers, which are copiously produced, have no scent, but owing to their bright golden colour the plant is a very attractive one. The specimen figured is from a plant about a foot in diameter, which is covered with flowers in the early months of the year.

Descr. *Pseudo-bulbs* one inch long and hardly so broad,

orbicular-ovoid, compressed, with blunt margins, obscurely grooved, quite smooth and even, not contracted into a neck; spathes narrowly lanceolate, acuminate, brown, equalling the pseudo-bulb. *Leaves* two from each pseudo-bulb, five to seven inches long by one half an inch broad, obtuse, keeled, narrowed at the base, deep green, midrib yellowish. *Scapes* from the base of the pseudo-bulb, much shorter than the leaves, one-flowered, with four to six green subacute sheathing bracts, the lower of which are imbricate; the uppermost is three-quarters of an inch long, rather inflated, obtuse, almost as long as the ovary. *Flowers* about one and a quarter inch broad, pale golden-yellow within, with a purple median stripe towards the base of the petals, paler without. *Sepals* incurved, dorsal arching, linear-oblong, subacute; lateral more lanceolate, much broader at the base, somewhat deflexed. *Petals* shorter than the sepals, ascending and incurved, their tips meeting under the dorsal sepal, narrowly linear-oblong, subacute. *Lip* rather shorter than the petals, three-lobed, claw short, sharply incurved; lateral lobes ear-shaped, erect, margins incurved, yellow streaked with purple; mid-lobe larger, orbicular-oblong, tip rounded, nearly flat, with a tubercular callus at the base, pale golden-yellow. *Column* slender, purple. *Pollen-masses* two, ellipsoid, each furrowed in front; caudicle short, small, subglobose; gland ragged.—*J. D. H.*

Fig. 1, Column (misrepresented) and lip; 2, column; 3, lateral view of lip and column; 4 and 5, pollen-masses :—*all enlarged.*

M.S del J.N.Fitch Lith

Vincent Brooks Day & Son Imp

Tab. 6478.

PHYTEUMA comosum.

Native of the Austrian Alps.

Nat. Ord. Campanulaceæ.—Tribe Campanuleæ.

Genus Phyteuma, *Linn.*; (*Benth. et Hook. f. Gen. Pl.* vol. ii. p. 561.)

Phyteuma (Synotoma) *comosum;* glabrum, caulibus e rhizomate ramoso gracilibus decumbentibus dein ascendentibus simplicibus, foliis polymorphis radicalibus cordatis v. orbicularibus longe gracile petiolatis, caulinis brevius petiolatis lanceolatis ovatis ellipticis ovato-lanceolatisve omnibus grosse et argute dentatis, floribus umbellatim capitatis, capitulo bracteis foliaceis involucrato, calycis lobis filiformi-subulatis, corolla basi inflata subglobosa 5-rimosa dein in tubum tenuem ore minuto desinente, ovario 2-loculari.

P. comosum, *Linn. Sp. Pl.* vol. i. p. 242; *DC. Prodr.* vol. vii. p. 450; *Jacq. Fl. Austr. Append.* t. 50; *Reich. Ic. Fl. Germ.* vol. xix. t. 1579; *Sturm Deutsch. Flora*, vol. vi. t. 22; *Trattn. Archiv.* t. 364.

A very rare and interesting little plant, hardy, and for the first time introduced into cultivation in Britain by George Maw, Esq., F.L.S., who procured roots at Monte Tombea in the Southern Tyrol, and transporting them to his rich collection at Benthall Hall, flowered them in July of last year. As a species it is unique in the genus as to the form of the corolla, the lobes of which are free only in the inflated basal part, and are above that combined into a very slender tube, with an entire or merely toothed mouth, which closely sheaths the style; in all the other species of the genus, of which there are between forty and fifty, the corolline lobes, though coherent for a considerable period before fertilization is effected, are finally free. In *P. comosum* the openings at the base of the corolla are no doubt efficient promoters of cross-fertilization, for insects seeking the honey secreted by the disk capping the ovary, would inevitably carry away pollen with them, wherewith to dust the forest of exserted stigmas.

P. comosum is a native of the Eastern Alps of Austria, Lombardy, Istria, Dalmatia, and Transylvania, where it inhabits elevations of 4000 to 5000 feet, its favourite site

being on dry rocks. The specimen figured is a very small one; those preserved in the Herbarium have radical leaves an inch broad on capillary petioles three to five inches long, and heads of flowers three inches in diameter, and there are often thirty to forty flowers in a head.

DESCR. A perfectly glabrous herb. *Root-stock* short, woody, branched. *Stem*, many from the root, slender, decumbent, then ascending, three to five inches long. *Leaves*, radical on filiform petioles three to six inches long; blade orbicular or cordate, one to one and a half inches in diameter, deeply coarsely acutely toothed; cauline two to five inches long, lanceolate elliptic or ovate, narrowed into a long or short petiole, coarsely toothed like the radical leaves, the teeth sometimes a quarter of an inch long. *Flowers* ten to thirty, forming an umbelliform terminal head, involucrate by sessile or petioled broad or narrow leaves; pedicels a quarter of an inch long. *Calyx*-tube small, cylindric; teeth filiform, one-eighth of an inch long. *Corolla* three-quarters to one inch long, curved; inflated portion pale lilac with five slits; tubular portion darker purple, very slender, closely embracing the style; mouth entire or five-toothed. *Stamens* with slender glabrous filaments, rather shorter than very slender subulate anthers. *Ovary* two-celled; style very long, the exserted portion equalling the corolla-tube in length, pubescent; stigmas two, long or short, slender, papillose.—*J. D. H.*

Fig. 1, Flower; 2, vertical section of ovary and calyx, with portion of base of corolla, stamens, and style; 3, stamen; 4, apex of style and stigmas:—*all enlarged*.

M S del. J.N. Fitch, Lith

Vincent Brooks Day & Son, Imp

L. Reeve & Co. London

Tab. 6479.

RUBUS phœnicolasius.

Native of Japan.

Nat. Ord. Rosaceæ.—Tribe Rubeæ.

Genus Rubus, *Linn.*; (*Benth. et Hook. f. Gen. Pl.* vol. iv. p. 616.)

Rubus *phœnicolasius*; caulibus elongatis teretibus cum petiolis costa foliorum pedunculisque tomentellis et setis glanduliferis rectis elongatis patentibus rubro-purpureis dense obsitis, setis caulinis inferioribus demum eglandulosis cum aculeis in caule fertili recurvis in sterili rectis tenuibus immixtis, foliis pinnatim 3-foliolatis, foliolis superne glabris subtus niveo-tomentosis crenato-serratis lateralibus sessilibus late oblique ovatis acuminatis, terminali simplici ovato acuminato v. majore latiore et 3–5-lobo, basi rotundato v. cordato, stipulis linearibus persistentibus, racemis terminalibus et axillaribus, floribus longiuscule pedicellatis, calycis segmentis elongato-lanceolatis petala minuta obovata longe superantibus, fructu succulento rubro, carpellis numerosis.

R. phœnicolasius, *Maxim. in Bull. Acad. Imp. St. Petersb.* viii. 393.

? R. occidentalis, *Thunb. Fl. Jap.* p. 216.

A singularly handsome bramble, introduced from Japan into Europe by Dr. Maximovicx, and communicated to us from the Jardin des Plantes of Paris by M. Decaisne. For the first year it was put in the open ground amongst the hardy species of *Rubus*, but being nearly killed during the succeeding winter, I transferred it to the Temperate House, where it thrives luxuriantly in an open border, climbing a pole ten feet high, and would much higher if allowed, flowering in Midsummer and bearing in autumn a profusion of scarlet berries. It is, no doubt, allied, as its author observes, to the common Raspberry, which is also a native of Japan, but differs in its climbing habit, racemose flowers, and petals, and in the fruit, which, though eatable, is mawkish. The flowers are very inconspicuous, owing to the small size of the petals; and the calyx lobes, which close over the ripening fruit, spread out again horizontally when the latter is ripe.

March 1st, 1880.

Descr. *Stem* tall, subscandent, round, robust below; branches slender, together with the petioles midrib of the leaflets beneath, peduncles and calyx clothed with close-set long spreading stiff gland tipped red-purple hairs, which in the lower part of the stem are glandless, and are mixed with slender straight or recurved prickles. *Leaves* five to seven inches long, pinnately 3-foliolate, or uppermost simple, petiole and rachis slender; leaflets green and glabrous above, covered with snow-white tomentum beneath, crenate-serrate; lateral sessile, ovate, acute; terminal larger and similar, or broader and three- to five-lobed; base rounded or cordate; stipules linear, persistent. *Racemes* terminal and eight- to ten-flowered, or shorter few-flowered and axillary. *Flowers* pedicelled, pedicels a quarter to three-quarters of an inch long; bracts linear. *Calyx* one and a half to two inches in diameter, segments spreading in flower, narrowly lanceolate, acuminate. *Petals* minute, erect, between spathulate and trapezoid, crenate, claw ciliate, pale rose-red. *Stamens* very short. *Carpels* hairy. *Fruit* ovoid-oblong, three-quarters of an inch long, of forty or more ellipsoid scarlet glabrous drupes. *Seed* rugose.—*J. D. H.*

Fig. 1, glandular hairs and prickles from lower part of branch; 2, petal; 3, stamens; 4, carpels; 5, fruit:—*all but fig.* 5 *enlarged.*

Reeve & Co. London

Tab. 6480.

PITCAIRNIA Andreana.

Native of Venezuela and New Granada.

Nat. Ord. Bromeliaceæ.—Tribe Pitcairnieæ.

Genus Pitcairnia, *L'Herit.*; (*K. Koch in Walp. Ann.* vol. vi. p. 78).

Pitcairnia *Andreana*; acaulis, foliis basalibus rosulatis, exterioribus rudimentariis nullo modo spinosis, interioribus productis 4–6 loratis acutis integris pedalibus vel sesquipedalibus facie viridibus conspicue albo-lepidotis dorso subtiliter persistenter albo-lepidotis, pedunculo brevi lepidoto foliis paucis consimilibus reductis prædito, racemo simplici compacto paucifloro, pedicellis brevibus ascendentibus, bracteis parvis lanceolatis, sepalis lanceolatis viridibus tenuiter lepidotis, petalis oblanceolatis obtusis splendide rubro-luteis calyce triplo longioribus, genitalibus petalis æquilongis.

P. Andreana, *Linden in Ill. Hort. New Series*, vol. xx. t. 139.

P. lepidota, *Regel in Act. Hort. Petrop.* vol. ii. p. 435.

This new *Pitcairnia* is remarkable in the genus for its dwarf habit, broad entire mealy leaves, and simple close raceme of very large bright-coloured flowers, which shade off from scarlet to bright yellow. One of its nearest allies is *P. flavescens*, figured Bot. Mag. tab. 6318, a species which I find by comparison with an authenticated example kindly lent to us by the late Dr. Karl Koch, to be identical with the earlier-named *P. xanthocalyx* of Martius. The present plant was introduced by Linden in 1872 from the province of Choco in New Granada, and about the same time was sent home from Venezuela by Roezl. Our drawing was made from a specimen that flowered at Kew in July, 1879, which was received from Dr. Regel.

Descr. Whole plant under a foot high. *Leaves* aggregated in a basal rosette, the outer undeveloped ones entirely without spines on the edge, the inner developed ones not more than four or six, lorate, chartaceous in texture, acute, a foot or a foot and a half long, an inch or an inch and a half broad at the middle, narrowed to about a third of an inch above the base, the face green, scattered

over with conspicuous white lepidote scales, the back finely persistently white lepidote all over, the edge quite entire. *Peduncle* four or six inches long, finely lepidote, furnished with several reduced leaves. *Raceme* simple, four or six inches long; pedicels ascending, not more than a quarter or a third of an inch long; bracts small, lanceolate. *Calyx* about three-quarters of an inch long, the base adnate to the ovary; segments lanceolate, green, horny, thinly lepidote. *Petals* oblanceolate, about two inches and a half long, unilateral in the expanded flower, bright scarlet in the lower part, passing into bright red upwards. *Stamens* nearly as long as the petals; anthers erect, linear, a quarter of an inch long. *Style*-arms strongly twisted.—*J. G. Baker.*

Fig. 1, scale from the upper side of the leaf; 2, anthers; 3, pistil; 4, style-arms untwisted; 5, style-arms, with their natural twist; 6, horizontal section of ovary: —*all magnified, except* 3.

A.B. del, J.N. Fitch, Lith.

Vincent Brooks Day & Son Imp.

Tab. 6481.

HYPERICUM ægyptiacum.

Native of N. Africa and the Levant.

Nat. Ord. Hypericineæ.—Tribe Hypericeæ.

Genus Hypericum, *Linn.*; (*Benth. et Hook. f. Gen. Pl.* vol. i. p. 165.)

Hypericum (Triadenia) *ægyptiacum;* fruticosum, erectum v. decumbens, glaberrimum, glaucum, foliis parvis oppositis ovatis acutis enerviis coriaceis superne concavis subtus subcarinatis, floribus ad apices ramulorum lateralium subsessilibus parvis, sepalis oblongis obtusis eglandulosis, petalis obovato-spathulatis supra unguem medio tuberculatis, phalangis 3 staminum glandulis hypogynis alternantibus, carpellis 3 brevibus, stylis brevissimis, ovulis paucis.

H. ægyptiacum, *Linn. Amœn. Acad.* vol. viii. p. 323, t. 8, f. 3; *DC. Prodr.* vol. i. p. 549; *Bot. Reg.* t. 196.

Triadenia microphylla, *et* thymifolia, *Spach in Ann. Sc. Nat.* ser. 2, vol. v. p. 173, t. 4.

T. ægyptiaca, *Boiss. Fl. Orient.* vol. i. p. 783.

The specific name of this pretty little shrub is unfortunate, for it has never, as far as at present known, been found in Egypt. It has however an extensive range in the Mediterranean islands and coasts; I have examined specimens from Lampedusa, Cephalonia, Zante, and Sphacteria, and it hence may possibly occur on the coast of Egypt westward of the Nile, which has never been explored by a botanist. Its western limit is Cape Agadir in Southern Morocco, on the shores of the Atlantic, where it has been discovered by a collector employed by M. Cosson in that district (which is impenetrable by Christians) since the publication of my fellow-traveller Mr. Ball's "Spicilegium Maroccanum." It is difficult to believe that *H. maritimum* Sieber and *H. Webbii* Spach, which differ only in the length of the styles, are anything but sexual states of *H. ægyptiacum:* of these the first is a native of Crete, as well as of Malta, whence we have specimens from Mr. Duthie, and the latter of the Ionian Islands.

In its native state *H. ægyptiacum* is a very low-growing, often prostrate, small shrub, with very woody stout trunk

and lower branches, but under cultivation against a wall at Kew it assumes an upright more twiggy habit, in which respect it accords with the figure in the "Botanical Register," made from greenhouse specimens grown at South Lambeth. It was introduced into cultivation nearly one hundred years ago, namely in 1787, by Mr. Thouin, and flowers freely in late autumn (October), when from the abundance of bloom it forms a very pretty object: it is moreover very hardy, the specimen at Kew having survived the last hard winter with no other protection but some cocoa-nut fibre on the ground around the base of the stem. The leaves a good deal resemble those of the New Zealand *Veronica pinguifolia*.

Descr. A small erect or prostrate woody perfectly glabrous shrub; branches erect, leafy. *Leaves* very small and uniform, one-third of an inch long, opposite, sessile, ovate, acute, coriaceous, nerveless, keeled at the back, concave in front. *Flowers* solitary on the ends of short lateral branches, shortly pedicelled; pedicels two-bracteolate. *Sepals* oblong, obtuse, concave, eglandular. *Petals* obovate-spathulate, subacute, pale golden-yellow, with a tubercle on the face above the claw. *Stamens* in three bundles, which alternate with as many two-lobed hypogynous glands. *Carpels* three, with very short styles and capitate stigmas.—*J. D. H.*

Fig. 1, flower cut longitudinally; 2, bundle of stamens; 3, carpels and hypogynous glands:—*all enlarged.*

M.S. del, J.N. Fitch, Lith.

Vincent Brooks Day & Son Imp.

L. Reeve & Co London

Tab. 6482.

WAHLENBERGIA TENUIFOLIA.

Native of Dalmatia.

Nat. Ord. Campanulaceæ.—Tribe Campanuleæ.

Genus Wahlenbergia, *Schrad.*; (*Benth. et Hook. f. Gen. Pl.* vol. ii. p. 555.)

Wahlenbergia (Edraianthus) *tenuifolia;* acaulis, foliis gramineis anguste linearibus elongatis glabriusculis spinuloso-ciliolatis ciliolis erecto-incurvis, ramis floriferis patentim pilosis decumbentibus, floribus capitatis bracteato-involucratis, bracteis hirsutis e basi late ovata v. suborbiculata lineari-elongatis subacutis exterioribus flores superantibus, calycis hirsuti segmentis subulatis sinubus edentatis, corolla infundibulari-campanulata, filamentis liberis late ovato-subulatis hirsutis, stylo patentim piloso apice glabro attenuato, stigmatibus brevibus.

W. tenuifolia *et* dalmatica, *Alph. DC. Monog. Campan.* pp. 133, 134.

Edraianthus tenuifolius *et* dalmaticus, *Alph. DC. Prodr.* vol. vii. p. 449.

E. tenuifolius, *Boiss. Fl. Orient.* vol. iii. p. 887; *Reichb. in Fl. Germ.* vol. xix. t. 1589.

Campanula tenuifolia, *Waldst. et Kit. Pl. Rar. Hung.* vol. ii. p. 168, t. 155.

C. graminifolia, *Host, Fl. Austr.* vol. i. p. 268, *excl. syn.*

The genus *Edraianthus* was established by Alphonse De Candolle (in the "Prodromus"), for a small group of plants, originally placed in *Campanula*, and on the division of that genus rightly referred to *Wahlenbergia*, from which latter it differs solely in the very peculiar habit of all the species, which are stemless, with linear grassy radical leaves, and suberect or decumbent flowering branches bearing heads of sessile flowers, which are involucrate by imbricating bracts. About four species are known, all natives of Southern Austria (Dalmatia, Croatia, and Transylvania), except one, which I have not seen, the *E. Owerinianus* of Ruprecht, a native of the Caucasus, and which from the description must differ very widely from its European congeners. Of the latter, *E. dalmaticus* appears to me to be identical with *E. tenuifolius*, and is indeed a native of the same mountains; the glabrous flowering-stems, on which the

specific distinction is founded, being a most inconstant character in the specimens I have examined. From *W. Kitaibelii*, figured at Tab. 6188 of this work, this species differs conspicuously in the long involucral bracts, as also in the absence of accessory teeth in the sinus between the calyx-segments, a character omitted in the plate referred to.

W. tenuifolia flowered in the rock-work at Kew, from roots received from M. Fröbel of Zurich, under the name of *Edraianthus caudatus*, a species differing from this in the very short broad calyx-segments; it flowered in August of last year.

Descr. *Root* stout, spindle-shaped, giving off from the crown a tuft of slender leaves, and several procumbent flowering-stems. *Leaves* one and a half to four inches long, by one-eighth of an inch wide, glabrous or hairy, margins with slender spinulose teeth, which are erect and curved inwards on the surface of the leaf. *Flowering-stems* usually shorter than the leaves, hairy or glabrate, with few linear leaves, which are much shorter than the radical ones. *Heads* two inches in diameter, four- to eight-flowered; bracts one to one and a half inches long, linear from a broadly ovate or almost orbicular base, hairy, the outer longer than the flowers, flexuous. *Flowers* sessile. *Calyx-tube* short; segments linear, hairy. *Corolla* half to three-quarters of an inch long, narrowly campanulate, pubescent, pale violet-blue. *Filaments* broadly ovate-subulate, hairy. *Style* thickened upwards and hairy, suddenly contracted into a glabrous top with two short stigmas.—*J. D. H.*

Fig. 1, flower; 2, calyx-tube, stamens, and style; 3, stamens; 4, stigmas; 5, vertical section of ovary; 6, marginal cilia of leaves:—*all but fig.* 1 *enlarged.*

Vincent Brooks Day & Son Imp

L Reeve & Cº London.

Tab. 6183.

CRINUM PODOPHYLLUM.

Native of Old Calabar.

Nat. Ord. Amaryllidaceæ.—Sub-order Amaryllideæ.

Genus Crinum, *Linn.*; (*Kunth. Enum.* vol. v. p. 547.)

Crinum *podophyllum;* bulbo parvo ovoideo, collo nullo modo producto, foliis 5–6 lanceolatis subpedalibus medio 1½–2 poll. latis deorsum in petiolum brevem canaliculatum angustatis margine obscure ciliatis, scapo laterali ancipiti vix pedali, spathæ valvis lanceolatis, floribus paucis perfecte sessilibus 8–9 poll. longis, tubo cylindrico erecto apice curvato, limbi horizontalis segmentis oblanceolato-oblongis acutis tubo duplo brevioribus albis extus viridi tinctis præter apicem diu conniventibus, staminibus declinatis limbo paulo brevioribus, antheris magnis polline luteo, stigmate capitato.

This new *Crinum*, in its spreading undulated leaves and dwarf stature most resembles *C. Careyanum* (Bot. Mag. tab. 2466), but in its very long tube and fewer flowers comes nearer its geographical ally *C. giganteum* (Bot. Mag. tab. 5205). The bulbs were sent not long ago from Old Calabar by the Rev. Hugh Goldie, and it flowered at Kew for the first time in November, 1879. Probably under further cultivation the leaves will be larger and the flowers more numerous than in the specimen drawn.

Descr. *Bulb* ovoid, an inch and a half in diameter, without any produced neck, the outer tunics pale brown. *Leaves* five or six in a rosette, cotemporary with the flowers, lanceolate, thin in texture for the genus and much undulated, spreading widely, about a foot long, acute, an inch and a half or two inches broad at the middle, narrowed gradually into a short deeply-channelled petiole. *Scape* ancipitous, lateral, erect, under a foot long. *Flowers* two in the specimen drawn, perfectly sessile, almost inodorous, eight or nine inches long. *Spathe-valves* two, lanceolate, green, erect. *Ovary* oblong. *Perianth* tube cylindrical, erect, curved at the top, five or six inches long; limb hori-

zontal, half as long as the tube, milk-white, tinted with green on the outside, without any red, the oblanceolate-oblong acute segments spreading at the tip only when fully expanded. *Stamens* nearly as long as the limb; anthers linear, eight or nine lines long, very versatile; pollen yellow. *Style* reaching nearly to the tip of the segments, pure white; stigma capitate.—*J. G. Baker.*

3

Tab. 6484.

CONANDRON RAMONDIOIDES.

Native of Japan.

Nat. Ord. Gesneraceæ.—Tribe Cyrtandreæ.

Genus Conandron, *Sieb. et Zucc.*; (*Benth. et Hook. f. Gen. Pl.* vol. ii. p. 1024.)

Conandron *ramondioides*; acaulis, rhizomate subtuberoso apice villis sericeis brunneis onusto, foliis oblongo- v. elliptico-ovatis subsessilibus v. in petiolum nudum v. late alatum eroso-dentatum contractis, acutis v. acuminatis irregulariter argute eroso-dentatis membranaceis glabris, basi interdum valde obliquo v. inæquali cordato v. abrupte v. sensim angustato, scapis nudis hirsutis v. glabratis, cymis multifloris nutantibus, floribus pedicellatis albis v. roseis, calycis laciniis linearibus.

C. ramondioides, *Sieb. et Zucc. in Abh. Munch. Akad.* vol. iii. 2, p. 729, t. 3, f. 1; *Miquel, Prolus. Fl. Japon.* p. 55; *A. DC. Prodr.* vol. ix. p. 273; *Maximov. in Bull. Acad. Petersb.* vol. xix. p. 537; *Mel. Biol.* vol. ix. p. 370; *Masters in Gard. Chron.* 1879, p. 232.

This very interesting plant has been elaborately described by Dr. Masters in the "Gardeners' Chronicle" cited above, and to its description that botanist has added full observations on its affinities and geographical relations to various allied or similar plants. The sum of these latter is, that *Conandron* is an aberrant member of a group of Gesneraceous plants, which spans the middle mountain regions of the Old World from Spain to Japan. Thus, it is represented in the Western Pyrenees by *Ramondia pyrenaica* (see Tab. 236, *Verbascum Myconi*), which indeed is its nearest relative; by a second species of that genus in Greece, by a third in Servia, and by *Haberlea* in the Balkan. From this last point there is a hiatus, till the Himalaya are reached, no representative having been hitherto discovered in the Caucasus or mountains of N. Persia; but in the Himalaya *Didymocarpus* takes up the eastward representation, and *Bæa* (see Tab. 6468) terminates it in N. China. *Wulfenia*, which is European and Himalayan, is intercalated by Dr. Masters, as is the Japanese and American genus *Shortia*; but these have, I think, no affinity with the above or with

Conandron. In a botanical point of view, its most remarkable character is its regular perianth, which is exceptional not only in the order to which it belongs, but in a great extent to the whole group of *Personales*.

The *Conandron* was introduced from Japan by Messrs. Veitch, who sent the specimen here figured in July of last year; it has a tolerably wide range in Japan, inhabiting moist rocks in the mountains of Nippon and Kiusiu.

DESCR. *Root-stock* tuberous, crowned with a tuft of silky brown hairs. *Leaves* four to seven inches long, all radical, subsessile or petioled, oblong or oblong-ovate or elliptic, acute or acuminate, irregularly acutely toothed, glabrous, often bullate between the spreading reticulating nerves; petiole either slender and naked, or broadly winged, the wing undulated and toothed like the leaf-blade. *Scapes* one to four, shorter than the leaves, hairy or glabrate, curved, quite naked. *Cymes* compound, drooping, pubescent, six- to twelve-flowered. *Flowers* pedicelled. *Calyx-lobes* slender. *Corolla* one inch in diameter, white or pink with a purplish eye; tube very short, funnel-shaped, lobes spreading, ovate, acute, tips recurved. *Stamens* five, equal, filaments very short; anthers broadly oblong, with the connective produced into a long point, both cells and connectives connate into a beaked tube. *Ovary* elongate, narrowed into a slender style with a minute capitate stigma. *Capsules* one-third to one-half of an inch long, membranous, terete, lanceolate, terminated by the persistent style. *Seeds* very minute, narrowly ellipsoid or oblong, narrowed at both ends, usually slightly curved in a sigmoid manner; testa pale brown, quite smooth.—*J. D. H.*

Fig. 1, fruiting cyme; 2, stamens; 3, pistil; 4, transverse section of pistil:—*all but fig.* 1 *enlarged.*

1

2

3

M S.del: J.N.Fitch,lith

Vincent Brooks Day & Son, Imp.

L. Reeve & Co London.

Tab. 6485.

CYANANTHUS LOBATUS.

Native of the Himalayan Mountains.

Nat. Ord. Campanulaceæ.—Tribe Campanuleæ.

Genus Cyananthus. *Wall.*; (*Benth. et Hook. f. Gen. Pl.* vol. ii. p. 557.)

Cyananthus *lobatus*; caulibus adscendentibus foliosis pilosis villosis v. glabratis, foliis glabratis cuneato-obovatis v. spathulatis irregulariter 3–5-lobatis v. inciso-crenatis, floribus breviter pedunculatis magnis speciosis, calycis tubo cylindraceo subinflato atro dense villoso breviter 5-lobo, lobis triangulari-lanceolatis, corollæ læte violaceæ lobis patenti-recurvis late obovatis apiculatis apicibus barbellatis.

C. lobatus, *Wall. Cat.* no. 1473; *Benth. in Royle Ill. Himal. Pl.* p. 309, t. 69, f. 1; *Lindl. in Bot. Reg. N. S.* vol. xx. t. 6; *Regel Gartenfl.* t. 888; *Hook. f. and Thoms. in Journ. Linn. Soc.* vol. ii. p. 19.

This is certainly one of the most beautiful of the alpine Himalayan herbaceous plants, forming broad patches on the bare mountain flanks at elevations of 12,000 to 14,000 feet from Kumaon eastwards to Sikkim, enlivened with a profusion of brilliant violet-blue horizontal or nodding flowers. It was discovered in Kumaon and Nepal by Wallich's collectors in 1821, and was introduced into the Horticultural Gardens in 1845 by that gallant soldier and accomplished botanist, General Munro, C.B., whose lamented death took place a few weeks ago. There, however, it seems to have flowered very imperfectly, the specimen figured in the *Botanical Register* having a shorter green faintly hairy calyx, and pale corolla with narrower lobes than in the specimen here figured. In his description of the plant Dr. Lindley alludes to the anomalous character of its wholly superior ovary and naked style, as opposed to its being placed in *Campanulacea*, to which Order Bentham had rightly referred it, and wherein it has been retained by all succeeding botanists.

Cyananthus lobatus may be successfully treated as a rock-

work plants, and though once long lost to cultivation, is not likely to be so again, now that herbaceous plants are fast becoming favourites with intelligent collectors. The specimen here figured was raised from Himalayan seeds, and flowered in the open border in July and August.

DESCR. A soft densely tufted low herb, with faintly milky juice. *Stems* decumbent, sending up numerous ascending slender usually simple one-flowered leafy branches, that are covered with brown spreading hairs or glabrate. *Leaves* one-half to one inch long, alternate, narrowly cuneate or cuneate-obovate, three- to five-lobed, the lobes entire or crenately cut, narrowed into a broad petiole, glabrous or sparingly hairy. *Flowers* solitary, terminal, erect in bud, then horizontal, one to one and a quarter of an inch long. *Calyx* broadly tubular and somewhat inflated, brown-black and clothed densely with dark brown long soft hairs; lobes about one-fourth the length of the tube, triangular-lanceolate, acute, erect. *Corolla-tube* broad, longer than the calyx; limb one to one and a quarter of an inch in diameter, throat open, bearded; lobes spreading and recurved, deep violet-blue, paler towards the throat, obovate with a minute bearded point. *Stamens* forming a membranous five-toothed tube around the ovary, filaments at length free and slender; anthers remaining united and bursting inwards. *Ovary* wholly superior, ovoid, five-grooved and five-celled; style rather short, glabrous, stigma with five short spreading teeth.—*J. D. H.*

Fig. 1, young ovary and staminal tube; 2, stamens; 3, transverse section of ovary:—*all enlarged.*

E.A.O del. J.N.Fitch Lith.

Vincent Brooks Day & Son Imp.

L. Reeve & Co. London.

TAB. 6486.

LONICERA TOMENTELLA.

Native of the Sikkim Himalaya.

Nat. Ord. CAPRIFOLIACEÆ.—Tribe LONICEREÆ.

Genus LONICERA, *Linn.*; (*Benth. et Hook. f. Gen. Pl.* vol. ii. p. 5.)

LONICERA (Xylosteum) *tomentella*; erecta, ramulis rigidis strictis foliisque subtus pilosis tomentellisve, foliis parvis breviter petiolatis ovato-oblongis obtusis coriaceis supra glabris v. puberulis opacis nervis inconspicuis, petiolo tomentoso, pedunculis axillaribus solitariis v. 2-nis brevibus tomentosis 2-floris, bracteis parvis lineari-oblongis recurvis, bracteolis in cupulam basin ovariorum amplectentem glabram connatis, floribus pendulis albis inodoris, ovariis liberis v. per paria connatis glabris, calyce breviter 5-dentato, corollæ tubo anguste infundibulari piloso, limbi subæqualis lobis brevibus rotundatis, stylo glabro, baccis piriformibus globosis v. didymis, seminibus parvis.

L. tomentella, *Hook. f. and Thoms. in Journ. Linn. Soc.* vol. ii. p. 167; *C. B. Clarke in Hook. f. Fl. Brit. Ind.* vol. iii. p. 12 (ined.).

Honeysuckles abound in the Himalaya, where no fewer than twenty-two species have been detected, some of which attain an elevation of 16,000 feet above the sea-level. The Indian mountains are, in fact, the head-quarters of the genus, all Europe containing but seventeen species; the Oriental region (from Greece to Affghanistan) possesses exactly the same number, according to Boissier's "Flora Orientalis;" the Russian dominions from the Baltic to the Pacific Ocean contain only thirteen, and North America about a dozen.

L. tomentella is a native of the interior valleys of the Sikkim Himalaya, at elevations of 8,000 to 12,000 feet, where I discovered it in 1849, forming a shrub ten to twelve feet high. The specimen figured was from a plant cultivated at Kew from seeds, sent by me in the above-mentioned year; it flowers annually in July.

DESCR. A rigid bush, ten to twelve feet high, with stiff spreading branches and slender usually densely softly tomentose branchlets. *Leaves* two-thirds to one and a half inch long, subdistichous, shortly petioled, ovate-oblong or

almost elliptic, rounded at both ends, dark dull-green and puberulous or glabrous and opaque above, paler beneath and more or less pubescent or tomentose; midrib stout, nerves obscure; petiole one-tenth to one-eighth of an inch long, tomentose. *Peduncles* axillary, solitary or in pairs (from opposite axils), very short, rarely one-sixth of an inch long, decurved, two-flowered, densely tomentose; bracts small, linear-oblong, spreading and recurved, green; bracteoles united into a glabrous cup which embraces the bases of the ovaries. *Flowers* in pairs, the ovaries glabrous, united or free. *Calyx-tube* hardly produced, with five triangular teeth. *Corolla* two-thirds of an inch long, tube narrowly funnel-shaped, not gibbous at the base, slightly hairy, white; limb of five subequal short rounded spreading lobes, white tinged with pink. *Stamens* included. *Ovary* two- to three-celled. *Style* glabrous, stigma capitate. *Berries* the size of a small pea, globose, blue-black, many-seeded.—*J. D. H.*

Fig. 1, flowers, bracts, and peduncles; 2, corolla laid open; 3, bracteoles and ovaries; 4, stamens; 5, style and stigma; 6, fruit:—*all enlarged.*

3
2
M.S del.
5
J.N Fitch lith.
4
1
Vincent Brooks Day & Son Imp.

Tab. 6487.

EICHORNIA azurea.

Native of Brazil.

Nat. Ord. Pontederiaceæ.

Genus Eichornia, *Kunth.*; (*Enum. Plant.* vol. iv. p. 129.)

Eichornia *azurea*; rhizomate crasso, foliis orbiculatis v. rhombeo-orbiculatis obtusis in petiolum elongatum crassum basi vix intumescentem angustatis, pedunculo crasso in spatham solitariam brevem recurvam obtusam dilatato, racemo multifloro, rachi robusto, floribus 2-nis breviter pedicellatis sparsis, perianthio extus piloso, segmentis obovato-oblongis obtusis exterioribus majoribus, interioribus marginibus erosis, staminibus fere inclusis, superioribus subæqualiter insertis 3 inferiorum postico demissius inserto, filamentis omnium brevibus subulatis subæquilongis puberulis, stylo gracili puberulo.

E. azurea, *Kunth, Enum. Plant.* vol. iv. p. 129; *Griseb. Fl. Brit. W. Ind.* 590; *Seubert in Mart. Fl. Bras.* vol. iii. part i. p. 90; *Schlecht. in Halle Abhandl. Nat. Gesell.* vol. vi. p. 149, *cum Ic.*; *Hemsley in The Garden*, 1880, p. 220.

Pontederia azurea, *Swartz, Fl. Ind. Occ.* vol. i. p. 609 (*non Bot. Mag.* t. 2932).

P. tumida, *Willd. Herb.* n. 6369 (*ex Kunth, l. c.*).

P. aquatica, *Vell. Fl. Flum. Ic.* vol. iii. t. 164.

The plants belonging to the Order *Pontederiaceæ* are described in systematic works in a very unsatisfactory manner; this is due to the fact that their very fugacious flowers cannot be analyzed in herbarium specimens, on account of their membranous consistence, and to the variations to which the leaves and stems of the same plant are subject, according to whether it grows in deep or shallow water or in mud. The genus *Pontederia* of Linnæus was in 1843 rightly divided into two by Kunth, who retained the old name for the species with one-ovuled ovarian cells, and founded upon the many-ovuled the new genus *Eichornia*. Seubert, in Martius and Endlicher's Flora of Brazil, has adopted those genera, describing six S. American species of the former and eight of *Eichornia*. It is with the latter we have to do in the matter of the plant here figured, and

I am unable from the descriptions to refer it altogether satisfactorily to any described species. Of these, only one of the species with racemose inflorescence has been hitherto well figured, namely, that referred (t. 2932) to Swartz's *Pontederia azurea* (which is also figured in Martius' "Nova Genera et Species," as *P. crassipes*, Martius). This Kunth considers not to be Swartz's plant, and makes a new species of it; *E. speciosa*, Kth. In so doing he is very probably justified, though it is to be regretted that he did not retain Martius' characteristic name of *crassipes*, especially as he quotes that author's description and figure. Swartz's *P. azurea*, then, is Kunth's *Eichornia azurea*, and the doubt in my mind is whether the subject of the present plate is referable to it. On the one hand, it appears to agree with a specimen of the only Jamaica species known to me which could be considered as Swartz's *azurea*, gathered by Purdie, and which Grisebach considers the true one; on the other hand, neither Swartz, nor P. Browne in his full description, alludes to the beautifully-toothed inner perianth segment of our plant, nor can the latter author's description of the stamens be regarded as quite satisfactory: "filamenta . . 3 superiora ad basim tubo adnata; 3 inferiora in fundo floris sita." Browne adds, "I observed this plant in most of the Lagoons about the Ferry;" and Purdie's ticket bears "Habitat, behind the Ferry," which must be regarded as settling the point in the present state of our knowledge.

The figure cited of Schlechtendahl, appears to represent a larger-flowered plant than this, with flowers not in pairs, almost orbicular-obovate, much larger inner perianth lobes, and the eye-like spot rounded.

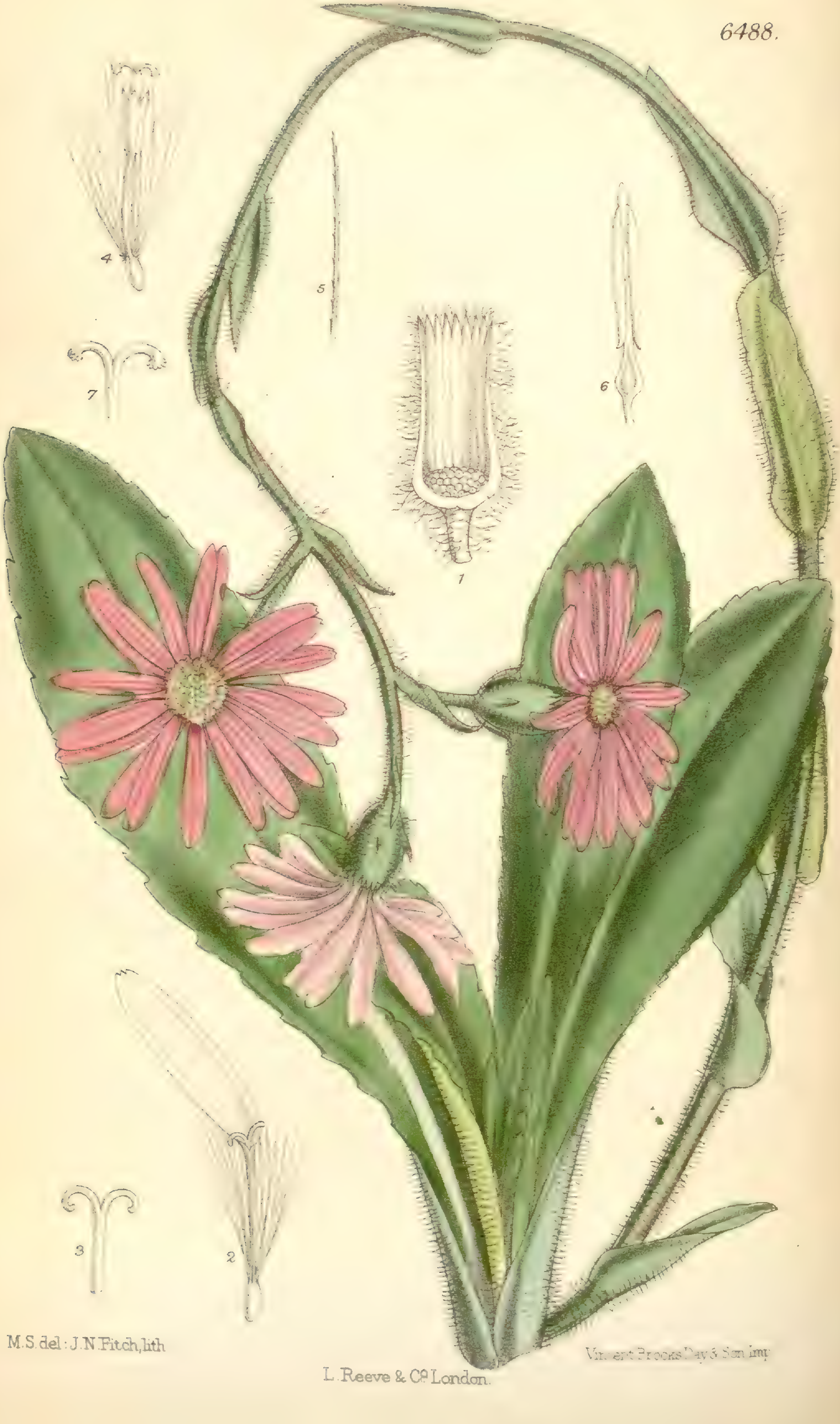
E. azurea is, as far as can be ascertained by a comparison of dried specimens, a common tropical South American water-plant, extending from South Brazil to Jamaica; it varies greatly in the size and form of the leaves and length of the petiole, and is found either floating, or rooted and erect in the muddy bottom of shallow water. It was introduced into the gardens of the Royal Botanic Society, Regent's Park, from Brazil, and flowered there in July of last year, and I am indebted to Mr. Sowerby for the plant here figured.

Descr. *Stems* as thick as the thumb, floating and rooting, green, smooth, flexuous. *Leaves* on long or short petioles,

which are not inflated, very variable in size and shape, three to eight inches in diameter, from rounded cordate to trapeziform or rhomboid or very broadly oblate and obcordate, rounded retuse or subacute at the tip. *Scape* often as stout as the petiole, curved, gradually dilated into a solitary short recurved very obtuse cucullate spathe. *Flowers* scattered or crowded in pairs along a stout hairy sessile rachis. *Perianth* one and a half inch long, funnel-shaped, hairy externally, bright pale-blue; tube often split between the segments; outer segments elliptic-lanceolate, acute, sub-equal, margins entire; inner segments obovate, obtuse, margins erose, upper rather the largest with a yellow heart-shaped eye which is margined with white. *Filaments* sub-equal, all short, papillose; three upper shortly exserted, three lower included in the tube, one placed lower than the others; anthers short, ovoid-oblong. *Ovary* glabrous three-celled, cells many-ovuled; style very slender, pubescent.—*J. D. H.*

Fig. 1, perianth laid open; 2, stamens; 3, ovary; 4, stigma; 5, ovary cut across:—*all enlarged.*

6488.



M.S. del: J.N. Fitch, lith

L. Reeve & Cº London.

Vincent Brooks Day & Son Imp

Tab. 6488.

SENECIO speciosus, DC.

Native of South Africa.

Nat. Ord. Compositæ.—Tribe Senecionideæ.

Genus Senecio, *Linn.*; (*Benth. et Hook. f. Gen. Pl.* vol. ii. p. 446.)

Senecio *speciosus;* herbaceus, glanduloso-pubescens v. hirsutus, radice perennante, foliis carnosulis radicalibus obovato-lanceolatis subacutis v. obtusis crenato-serratis v. sinuato-dentatis, scapo elongato robusto flexuoso, foliis caulinis oblongis inferioribus auriculato-½-amplexicaulibus obtusis, superioribus sessilibus acutis, corymbis laxis, capitulis longe pedunculatis roseo-purpureis disco saturatiore, involucro subcampanulato basi rotundato bracteis paucis dissitis instructo, bracteis propriis anguste linearibus glanduloso-hirsutis, floribus radii 6–20, ligula lineari stricta patente apice minute 3-dentata, acheniis sulcatis puberulis.

S. speciosus, *Willd. Sp. Pl.* vol. iii. pars 3, p. 1991; *DC. Prod.* vi. 407; *Lodd. Bot. Cab.* t. 1113; *Ker in Bot. Reg.* t. 41; *Ait. Hort. Kew.* vol. v. p. 43; *N. Brown in Gard. Chron.* 1879, p. 615.

S. pseudo-china, *Andr. Bot. Rep.* t. 291, *non Linn.*

S. concolor, *Harv. et Sond. Fl. Cap.* iii. 362, *in part.*

S. concolor *var.* hispido-scabra, *DC. l. c.* 407.

Mr. N. Brown has, in the "Gardeners' Chronicle" quoted above, cleared up the confused synonymy and history of this beautiful plant. It was published first in 1806, by Andrews, as the Linnæan *S. pseudo-china*, it being supposed to have been introduced from that country, and to afford the drug called "China-root," which, however, involved a second mistake, as that drug is the produce of a *Smilax*.

It next appeared in Willdenow's "Species Plantarum," the author of which, recognizing its difference from Linnæus' *S. pseudo-china*, called it *S. speciosus*. In 1816 Ker figured it under Willdenow's name in the "Botanical Register," observing that the native country of the plant was not precisely determined, it being called Siberian by some and Chinese by others. Ten years afterwards Loddiges figured it in his "Botanical Cabinet," as introduced by him from the Mauritius, adding that it is a supposed native of China. In 1837 De Candolle, having South African specimens of Ecklon and Drege before him,

and not recognizing their identity with *S. speciosus*, published it as a variety of his *S. concolor*, placing it, however, close to the supposed Chinese *S. speciosus*, whose true relationship to the otherwise wholly African group of this difficult genus he had the sagacity to discern. Lastly, Harvey, in the "Flora Capensis," describes it as var. *hispidus* of *S. concolor*, DC., and suggests that it should be regarded as the type of that species. In this he clearly errs, *S. speciosus* being a very different and far finer plant than *S. concolor*, with which, however (and with very few others of the genus, and these all, according to Mr. Brown, South African), it agrees in the disk flowers being almost concolorous with the ray.

The specimen here figured was flowered in July last in the Royal Botanical Gardens of Edinburgh, from seeds collected in December, 1878, on the battle-field of Quintana, by Sergeant D. Williamson. It has a wide range in South Africa, from the Cape of Good Hope itself to Natal, and, as Mr. Brown remarks, its supposed Chinese origin is probably due to its having been brought by one of the homeward-bound China-ships, which regularly touched at the Cape. According to the "Hortus Kewensis," it was introduced into England about 1789 by G. Slater, Esq.

Descr. *Root* stout, fleshy, perennial. *Leaves* four to seven inches long, obovate lanceolate or narrowly linear spathulate, crenately toothed or sinuately lobed, rarely subpinnatifid, subacute or obtuse, clothed more or less densely with glandular hairs, sometimes almost hispid when dry. *Scape* a foot high or less, with spreading glandular hairs, and alternate rather distant erect linear-oblong leaves, the lower of which are cordate and semi-amplexicaul. *Corymbs* spreading, with few long-peduncled heads, which are one and a half inch in diameter, and of a bright-purple colour. *Involucre* broadly campanulate, densely glandular-hairy, calyculate by a few short bracts at the rounded base; bracts narrowly linear. *Ray-flowers* six to twenty; ligules narrowly linear, spreading straight out, minutely toothed at the tip. *Achenes* slender, grooved, pubescent; pappus hairs very slender, scaberulous, silky, white.—*J. D. H.*

Fig. 1, involucre cut open; 2, ray-flower; 3, its style-arms; 4, disk-flower; 5, pappus hair; 6, stamen; 7, style-arms:—*all enlarged.*

F.W.Burbidge del J.N.Fitch Lith

Vincent Brooks Day & Son Imp

L Reeve & Co London.

TAB. 6489.

XIPHION KOLPAKOWSKIANUM.

Native of Turkestan.

Nat. Ord. IRIDACEÆ.—Tribe XIPHIONIDEÆ.

Genus XIPHION, *Tournef.*; (*Baker in Journ. Linn. Soc. Bot.* vol. xvi. p. 122).

XIPHION *Kolpakowskianum*; bulbo globoso, tunicis exterioribus fibrosis fibris validis irregulariter anastomosantibus, foliis paucis anguste linearibus pallide viridibus profunde canaliculatis albo-vittatis post anthesin accrescentibus, scapo brevissimo hypogæo unifloro, spatha elongata cylindrica pallide viridi bivalvi, ovario cylindrico pedicellato, tubo cylindrico bipollicari pallide lilacino, limbi segmentis æquilongis, exterioribus oblongo-lanceolatis acutis longe unguiculatis, lamina flore expanso patula saturate lilacino-purpurea, carina aurantiaca imberbi, segmentis interioribus oblanceolatis unguiculatis erectis pallide lilacinis concoloribus, stylis perianthio paulo brevioribus pallide lilacinis, cristis lanceolatis, antheris albis, filamentis liberis.

Iris (Xiphion) Kolpakowskiana, *Regel Descript.* part v. p. 47; *Gartenfl.* vol. xxvii. (1878), p. 40 and 161, tab. 939.

This is one of the many interesting bulbous plants which have been discovered during the last few years by the Russian explorers in Central Asia, and which have been sent alive to St. Petersburg by the exertions of Dr. Albert Regel, and liberally distributed by his father amongst the European public gardens and amateurs. The present plant is a close ally of the well-known *Xiphion reticulatum* of the Orient and the Caucasus, of which a good figure under the name of *Iris reticulata* will be found Bot. Mag. Tab. 5577. The principal difference between the two is not in the flower, but in the bulb and leaves. It flowers at the same time, and has something of the same violet odour, and in all likelihood will prove equally hardy. It grows plentifully in fields near Wernoje, in Turkestan, and was named by Dr. Regel in compliment to General Von Kolpakowsky. Our plate was made from specimens and a coloured sketch sent by Mr. F. W. Burbidge, with whom it flowered under glass in the botanic garden at Trinity

College, Dublin, in the middle of January this present year.

Descr. *Bulb* globose, half an inch in diameter; outer tunics fibrous, the fibres strong and anastomosing irregularly. *Leaves* wrapped round at the base by a sheath two or three inches long, which reaches to the surface of the ground; produced leaves four to six, narrow linear, glabrous, rounded and faintly keeled on the back, deeply channelled down the face with a distinct white central band like a Crocus, pale green, not glaucous, very short at the flowering time, but growing much longer as the spring advances. *Scape* very short, hypogæous, one-flowered. *Spathe* cylindrical, pale green, about two inches long, two-valved. *Ovary* cylindrical, pedicellate inside the spathe. *Perianth* about four inches, the tube and the limb of equal length, the former cylindrical, pale lilac, protruded considerably above the top of the spathe; outer segments with a long erect claw and a spreading oblong-lanceolate acute blade, which is deep violet-purple, with a beardless bright yellow keel; inner segments just the same length as the outer, oblanceolate-unguiculate, erect, pale lilac, concolorous. *Styles* the same colour as the inner segments, and falling but little short of them; crests lanceolate, a third of an inch long. *Anthers* cream-white, under half an inch long; filaments free, as long as the anthers.—*J. G. Baker.*

Fig. 1, a bulb, *natural size*; 2, section of a leaf; 3, an inner segment of the perianth; 4, style and anther:—*the two latter about natural size.*

6490

M S del. J N Fitch lith

Vincent Brooks Day & Son, Imp

Tab. 6490.

CYPRIPEDIUM Spicerianum.

Native of the East Indies.

Nat. Ord. Orchideæ.—Tribe Cypripedieæ.

Genus Cypripedium, *Linn.*; (*Endl. Gen. Pl.* p. 220.)

Cypripedium *Spicerianum*; foliis distichis lineari-oblongis subacutis carinatis basi complicatis luride viridibus, scapo pubescente purpureo gracili 1-floro, bractea oblonga viridi purpureo-striolata ovario purpureo pubescente multo breviore, sepalo dorsali magno e basi erecto virescente hirsuto in laminam albam porrectam late reniformi-rotundatam marginibus recurvis auriculæformibus et apice complicato erecto dilatato, sepalis lateralibus in unum late ovatum acutum labello subpositum connatis, petalis brevibus deflexis lineari-oblongis flavo-viridibus et rubro striolatis marginibus crispato-undulatis, labello saccato auriculis rotundatis saturate fusco-purpureo, sinu lato acuto, staminodio rotundato læte purpureo marginibus albis recurvis, columna hirsuta.

C. Spicerianum, *Reichb. f. ex Gard. Chron.* 1880, p. 40 et 74, *et Ic. xylog.* p. 41, *sine descriptione.*

Very distinct from any described species of *Cypripedium*, and belonging to the prolific group of the genus of which *C. insigne*, Wall., is the first-published example. Of its history little is known; I have found no description of it, and the only information which I have gathered regarding it is from a passage in the "Gardeners' Chronicle," to the effect that "it is understood to have been received from India, some time ago, by Mr. Spicer, amongst a mixed collection of Orchids, without any indication whatever as to its habitat. When it flowered for the first time, a bloom was sent to Prof. Reichenbach, who named the plant in compliment to the gentleman through whose instrumentality it was introduced into British gardens, and for whom Messrs. James Veitch and Sons purchased the stock." I am indebted to Messrs. Veitch for the specimen here figured, which flowered in October, 1879, in their establishment at Chelsea.

Descr. Stemless. *Leaves* few, distichous, five to eight

inches long by one to one and a quarter inch broad, narrowly linear-oblong, dark green and deeply channelled down the centre above, keeled beneath, complicate at the base, where the sheathing portion is mottled with purple. *Scape* about as long as the leaves, with an oblong compressed basal sheath, slender, dark red-purple, pubescent, one-flowered; bract linear-oblong, obtuse, compressed, much shorter than the red-purple ovary, green streaked with purple dots. *Flowers* erect, three inches long from the base of the sac of the lip to the top of the dorsal sepal, and about two inches across the petals when these are in their ordinary deflexed position. *Dorsal sepal*, very large, suddenly expanding from a broad cuneate hairy green speckled base into an almost horizontal broad snow-white and obcordate lamina nearly two inches in diameter, the dorsal margins of which are reflexed and decurved; the anterior margin stretches forward and is complicate in the middle, there forming a very acute compressed erect ridge; a thin purple line runs from the base to the top of the sepal. *Lateral sepals* combined into a broadly ovate acuminate white concave blade, with recurved margins placed under the lip and shorter than it. *Petals* much shorter than the lip, deflexed, linear-oblong, obtuse, with crisped margins, pale greenish with red stripes and specks. *Lip* large, sac bell-shaped with rounded everted auricles and a broad acute sinus, base rounded, red-brown, glossy. *Column* short, hairy, staminode orbicular with strongly recurved margins, bright purple margined with white.—*J. D. H.*

Fig. 1, side, and 2, front view of column and staminode; 3, apex of column and anther :—*all enlarged.*

Vincent Brooks Day & Son Imp.

L. Reeve & Cº London

Tab. 6491.

ARISÆMA Griffithii.

Native of the Eastern Himalaya.

Nat. Ord. Aroideæ.—Tribe Arisareæ.

Genus Arisæma, *Mart.*; (*Engler in A. DC. Monog. Phan.* vol. ii. p. 533.)

Arisæma *Griffithii*; robustum, foliis 2-nis 3-foliolatis petiolo viridi, foliolis subsessilibus late trapezoideo-ovatis orbiculatisve acuminatis basi cuneatis lateralibus interdum obliquis marginibus planiusculis flavis rubrisve, nervis viridibus subtus prominulis, pedunculo petiolo multo breviore viridi, spathæ tubo 4–5-pollicari cylindraceo multicostato albo purpureoque striato, lamina latissima 6–10 poll. lata deflexa inflata marginibus incurvis medio antice inflexa et profunde 2-loba atro-purpurea nervis crassis validis viridibus tessellatim laxe reticulata, spadicis parte florifera crassa conico-cylindracea apice abrupte contracta nuda, appendice atro-purpurea basi in discum amplum sublobatum dilatata, dein fusiformi et in filum longissime tenuissimum tortile desinente, ovariis subglobosis **in stylum brevem contractis, stigmate truncato.**

A. Griffithii, *Schott, Synops. Aroid.* vol. i. p. 26 (1856); *Prodr. Syst. Aroid.* p. 54; *Engl. l. c.* 538.

A. Hookerianum, *Schott in Œst. Bot. Wochenbl.* 1857, p. 334; *Prodr. Syst. Aroid.* p. 29.

Pythonii *Sp.*; *Griff. Posth. Papers*, vol. ii. p. 201, no. 1179.

This is by far the finest species of the genus as yet known. It was discovered by Griffith in Bhotan, at elevations of 3000 to 5000 feet, and named, from imperfect specimens, after its discoverer by Schott, who however failed to recognize it amongst the species subsequently brought by myself from Sikkim, and transmitted to him for examination, and he consequently gave to the latter the name of *A. Hookerianum*. A comparison of Griffith's Bhotan specimen with my own does not enable me to detect any difference between them, though the latter appears to affect a much higher elevation, for I have never gathered it much below 8000 feet of elevation, and it ascends to 10,000 feet.

Under *A. utile* (Tab. 6474) I have described the use to which the tuberous roots of this and other species of

Arisæma are put by the natives of the Himalaya in times of scarcity as articles of food. The plate here given is from a specimen flowered by H. N. Elwes, Esq., who introduced this and many other species, aided by a drawing made in its native country by an artist employed by the late Judge Cathcart, and preserved in the Kew collection of drawings. In this drawing the bases of the peduncle and petioles are subtended by two oblong membranous sheaths, three and five inches long respectively, which are white and obscurely mottled or banded with dull grey. It flowered at Preston House in May, 1879.

Descr. Diœcious. *Tuber* the size of the fist. *Leaves* two; petiole five to eight inches long, thicker than the thumb, green; leaflets three, eight to ten inches long and broad, from trapezoid-ovate to orbicular, acuminate or apiculate, subsessile, dark green with deeply-sunk reticulate veins which are very prominent beneath, margins slightly undulate yellow or red. *Peduncle* shorter and hardly so stout as the petiole, green. *Spathe* very large, tubular portion four to six inches long, cylindric, expanding above into a convex crown, which again dilates into the lamina, deeply grooved, grooves dull purple, the ridges broad and white; lamina of spathe six to ten inches broad, deflexed, spreading out into broad lateral wings which are almost convolute, deeply cleft in front; whole surface of a brown-purple colour netted with prominent-green veins. *Spadix* with the flowering portion very short, about one inch long, cylindric-conic, suddenly contracted into a short naked column supporting the dark brown-purple polished appendix, which expands at the base into a lobed thick circular disk, then contracts into a fusiform body which terminates in a very slender tortuous thread a foot long; this thread is in a young state folded in one of the three leaflets of the leaf. *Anthers* scattered, stipitate, pale yellow. *Ovaries* very dense, subglobose, contracted into a short style with a truncate stigma. *Ovules* about six, pendulous from the top of the cell.—*J. D. H.*

Fig. 1, male spadix, *of the natural size;* 2, anther after dehiscence, *enlarged*.

A B del J N Fitch Lith

Vincent Brooks Day & Son Imp.

L Reeve & Cº London

Tab. 6492.

RIBES lacustre.

Native of North America.

Nat. Ord. Saxifrageæ.—Tribe Ribesieæ.

Genus Ribes, *Linn.*; (*Benth. et Hook. f. Gen. Pl.* vol. i. p. 654.)

Ribes (Grossularia) *lacustre*; ramulis longe et crebre setosis spinosisque, spinis rectis gracilibus subaxillaribus fasciculatis elongatis, foliis gracile petiolatis cordato-rotundatis palmatim 3–5-lobatis v. -partitis, lobis segmentisve lobulatis et crenato-dentatis glaberrimis membranaceis, racemis laxis pendulis gracilibus pedicellisque glanduloso-pilosis multifloris, floribus parvis, calyce rotato obtuse 5-lobo, petalis cuneatis calyce brevioribus, staminibus æquilongis, stylo glabro 2–3-fido, bacca parva hispida.

R. lacustre, *Poir. Suppl.* vol. ii. p. 856; *DC. Prod.* vol. iii. p. 478; *Torr. et Gr. Fl. N. Am.* vol. i. p. 548; *A. Gray, Bot. N. U. States*, ed. v. p. 165; *Lodd. Bot. Cab.* t. 884; *Guimp. Otto, et Hayne, Holzgew.* t. 136.

R. oxyacanthoides, *Michx. Fl. Bor. Am.* vol. i. p. 111.

R. echinatum, *Dougl. in Lindl. Bot. Reg. sub.* t. 1349.

The "swamp Gooseberry" of the United States of America inhabits cold wet situations, especially the banks of mountain rivers across the whole continent, from the Arctic Circle in Canada to Sitka and British Columbia, and from New England to Northern California, retaining its habits and characters in more northern situations and throughout the Eastern States, but becoming less bristly and more spiny in California, where, too, the leaves are pubescent. Though unattractive in point of inflorescence, its beautiful green delicate foliage and the purplish-brown branches render it a desirable shrub for cultivation. The fruit, which is always small, seems to vary in quality. Asa Gray describes it as "unpleasant" in New England; Lindley (under *R. echinatum*) says, on Douglas's authority, "berries black, pleasant;" Sereno Watson describes the fruit of the Californian variety as "acid, intermediate between a gooseberry and a currant;" the colour of the berry, too, is variously described as dark-brown, red, amber, and purplish-black.

Though introduced so long ago as 1812, according to

Loudon, the Swamp Gooseberry has never till now been well figured; our specimen is from a fine bush that flowers annually in Kew in the month of June.

Descr. A bright-green erect shrub, three to five feet high; young branches straight, rather stout, densely clothed with rigid purple-brown spreading bristles; these pass into slender straight shining weak spines, which again are longer, stouter, and fascicled beneath the insertion of the leaves. *Leaves* with very slender petioles, one to two inches in diameter, suborbicular with a deeply cordate base, membranous, palmately three- to five-lobed or parted, lobes lobulate and irregularly crenate-toothed, glabrous; petiole one to two inches long, very slender, glabrous or sparsely hairy. *Racemes* one to three inches long, slender, drooping, glandular-hairy, many-flowered; bracts small, elliptic, green, and as well as the pedicels and calyx-tube glandular-hairy. *Flowers* one-fourth of an inch in diameter. *Calyx-tube* short; limb rotate, obtusely five-lobed, nearly white. *Petals* much shorter than the calyx-limb, cuneate, yellowish, pink towards the base. *Stamens* about equalling the petals. *Style-arms* two to three, as long as the stamens. *Berries* size of a pea, hispid.—*J. D. H.*

Fig. 1, flower; 2, the same cut vertically; 3, petal; 4, stamens:—*all enlarged.*

4.

1.

3.

2.

M.S. del. J.N. Fitch Lith.

Vincent Brooks Day & Son Imp.

Tab. 6493.

PRIMULA SIBIRICA, *var.* kashmiriana.

Native of the Western Himalaya.

Nat. Ord. Primulaceæ.—Tribe Primuleæ.

Genus Primula, *Linn.*; (*Benth. et Hook. f. Gen. Pl.* vol. ii. p. 631.)

Primula *sibirica;* glabra, efarinosa, foliis laxis petiolatis ovatis ellipticis v. oblongis rarius obovatis integerrimis v. marginibus leviter undulatis pallide viridibus marginibus vernatione revolutis, scapis gracilibus, involucri bracteis carnosulis verticillatis lineari-oblongis obtusis basi in auriculam apice rotundatam demum productis pedicellis multo brevioribus, calyce tubuloso-campanulato breviter obtuse 4-dentato, corollæ tubo graciii, limbi explanati rosei lobis cuneatis 2-lobis, sinu acuto, fauce nuda.

Var. *kashmiriana*, floribus minoribus, corollæ tubo calycem vix superante lobis angustioribus.

This pretty Primula has been cultivated under the name of *P. elegans*, Duby, from which, judging by the poor figure which that author gives in his "Memoire sur la Famille des Primulacées" (Tab. 1), it differs widely in its petiolate leaves, slender scapes and pedicels, obtuse involucral bracts, and in the short calyx-teeth. In fact, I have no doubt that *P. elegans* is nothing but the lovely *P. rosea*, figured last year (Tab. 6437); the only difference I find in the description is, that the flowers of *P. elegans* are, on its discoverer Jacquemont's authority, lilac, which may be accounted for by the flowers having faded; in fact, Duby says of his *elegans*, "an a priore (*rosea*) revera distincta?" The close affinity of the plant here figured to the *P. sibirica* is evident from referring to the plate of that plant (Tab. 3167), which represents its large flowered state, and it is still more like the *P. sibirica* var. *integerrima* (Tab. 3445), a native of the Altai mountains, which only differs in the corolla-tube being elongated and twice as long as the calyx. In a dried state it is very difficult to distinguish *P. sibirica* from *P. involucrata* (*P. Munroi*, Lindl. Bot. Reg. 1847, t. 15), which, however, differs in the shorter calyx, long corolla-tube, pale

almost white flowers, with a deep narrow sinus between the divisions of the corolline lobes.

The Siberian Primrose has a very wide range of geographical distribution, from Lapland and Sweden across the continents of Europe and Asia to Dahuria, and it reappears in Arctic America; its southern limit, however, is Kashmir, from whence seeds were sent to the Royal Gardens by Dr. Aitchison, which flowered in June of last year.

Descr. Slender, quite glabrous, not mealy. *Leaves* loosely tufted, long-petioled, half an inch to two inches long including the petiole, ovate elliptic or rarely obovate, obtuse or subacute, base narrowed into the petiole or rounded, margins quite entire revolute in vernation, pale green above, paler beneath, nerves faint. *Scapes* very slender, three to eight inches high. *Involucral bracts*, four to six, whorled, erect, linear, obtuse, the base produced downwards into a flat appendage with a rounded tip. *Flowers* usually very numerous, loosely fascicled, drooping or inclined; pedicels very slender, a quarter to three-quarters of an inch long. *Calyx* very narrowly campanulate, five-grooved, base subacute, teeth short, obtuse. *Corolla* pale pink, tube hardly longer than the calyx; limb flat; lobes obcuneate, two-lobed, the divisions rounded with an acute open sinus between them; throat naked, not expanded.—*J. D. H.*

Fig. 1, calyx; 2, corolla laid open; 3, calyx laid open, showing the pistil; 4, anthers:—*all enlarged.*

3

4.

2

1.

A B del J N Fitch Lith.

Vincent Brooks Day & Son Imp

L. Reeve & Cº London

Tab. 6494.

ONCIDIUM DASYSTYLE.

Native of Brazil.

Nat. Ord. Orchideæ.—Tribe Vandeæ.

Genus Oncidium, *Swartz; (Lindl. Fol. Orchid.* Oncidium.)

Oncidium (Tetrapetala) *dasystyle;* pseudobulbis breviter ovoideis compressis demum creberrime longitudinaliter sulcatis, foliis 2 lineari-lanceolatis subacutis carinatis, scapo gracili paucifloro, bracteis parvis acutis, floribus gracile pedicellatis, sepalo dorsali petalisque subæqualibus elliptico-lanceolatis acuminatis flavis purpureo maculatis, sepalis lateralibus paullo majoribus labello suppositis ad medium connatis pallide virescentibus, labelli ampli lobis lateralibus parvis triangularibus terminali dilatato reniformi undulato membranaceo, callo basilari magno cordiforme valde convexo purpurascente basi utrinque callo minuto elongato instructo, columna apicem versus alata lateribus ungueque labelli puberulis.

O. dasystyle, *Reichb. f. in Gard. Chron.* 1873, p. 293 *et* 432.

A very elegant plant, a native of the Organ mountains in Brazil, whence it was imported by Messrs. B. F. Williams, of the Paradise Nurseries. Its near allies are the *O. citrinum* (Tab. 4454), *O. bifolium* (Tab. 1491), and *O. flexuosum* (Tab. 2203), all of which differ in the form of the labellum, its crests, and in other conspicuous characters. In its lateral sepals being united only below their middle, it forms a transition between Lindley's two great sections of Tetrapetala and Pentapetala.

The specimen here figured was kindly communicated by Mr. Bull.

Descr. *Pseudo-bulbs* one to one and a half inch long, almost elliptic, with rounded ends, which are truncate at the insertion of the leaves, slightly compressed, green, edges obtuse, young quite smooth, old longitudinally grooved with obtuse ridges. *Leaves* four to five inches long by one broad, linear-lanceolate, subacute, keeled, bright green. *Scape* very slender, six to seven inches long, with a few distant small acute bracts. *Raceme* two-

to five-flowered, lax, drooping; pedicels one-half to three-fourths of an inch long, very slender. *Ovary* short. *Flowers* one and a quarter of an inch in diameter across the spreading petals. *Dorsal-sepals* and *Petals* subequal, elliptic-lanceolate, acuminate, pale straw-coloured, blotched with brown-purple; lateral sepals hidden under the lip, rather larger than the dorsal, united to the middle, pale greenish-yellow, obscurely speckled with brown. *Lip* nearly as large as the rest of the perianth; claw very short, pubescent; lateral lobes small, triangular; terminal one expanding into a broad undulate membranous reniform pale yellow blade; basal crest cordiform with the two-lobed end pointing downwards, much elevated, smooth, dark purple and shining; towards its base on each side is a narrow short linear crest. *Column* short, with a rounded wing on each side towards the top; sides pubescent, as is the anther-case, which has a short obtuse beak.—*J. D. H.*

Fig. 1, column and lip; 2, side view of the same and the ovary; 3, anther-case; 4, pollinia :—*all enlarged.*

W.S. del. J.N. Fitch. Lith.

Vincent Brooks Day & Son Imp

L. Reeve & Co. London

Tab. 6495.

TILLANDSIA Malzinei.

Native of Mexico.

Nat. Ord. Bromeliaceæ.—Tribe Tillandsieæ.

Genus Tillandsia, *Linn.*; (*Schulte's Syst. Veg.* vol. vii. p. lxvi. and 1199.)

Tillandsia (Conostachys) *Malzinei*; acaulis, foliis basalibus 15–20 dense rosulatis loratis falcatis chartaceis subpedalibus nullo modo lepidotis apice deltoideo-cuspidatis facie viridibus dorso rubro-brunneis verticaliter lineatis, pedunculo stricto erecto foliis breviori foliis reductis pluribus lanceolatis falcatis prædito, floribus 12–20 in spicam strictam subdensam multifariam disposito, bracteis magnis glabris ovatis navicularibus luteis vel rubris, pedicellis brevibus crassis, calyce protruso glabro sepalis oblongis obtusis, petalis lingulatis obtusis albidis calyce duplo longioribus basi squamatis, genitalibus petalis paulo brevioribus, antheris parvis luteis versatilibus.

T. Malzinei, *Baker in Kew Gard. Report*, 1878, p. 59.

Vriesea Malzinei, *E. Morren in Belg. Hort.* vol. xxiv. (1874), p. 313, tab. 14.

The present species represents the section *Conostachys* of the large genus *Tillandsia*, which is characterized by its scaled petals and multifarious spikes, and is the first species of that section which has been figured in the Botanical Magazine. It was discovered about the year 1870 in the neighbourhood of Cordova, in Mexico, by the Belgian gentleman after whom it is named, M. Omer de Malzine, and was first flowered in cultivation by M. Jacob Makoy, of Liége, in 1872. The excellent figure in the Belgique Horticole above cited represents a variety with red bracts. In our plant, which flowered at Kew in April, 1879, the bracts are yellow.

Descr. Acaulescent. *Leaves* fifteen or twenty in a dense rosette, lorate, about a foot long, three inches broad at the dilated base, an inch and a half or two inches at the middle, falcate, chartaceous in texture, not at all lepidote, the apex deltoid cuspidate, the face bright green, the back red-brown with fine vertical lines. *Peduncle* simple, rather shorter than the leaves, stiffly erect, with several falcate

lanceolate reduced leaves. *Flowers* twelve to twenty, arranged in a moderately dense simple multifarious spike; bracts ovate-navicular, acute, glabrous, above an inch long, yellow or red. *Calyx* on a very short stout pedicel, protruded a little beyond the bract, green, glabrous; sepals oblong, obtuse. *Petals* white, lingulate, twice as long as the calyx, furnished with a pair of cuneate white fimbriated scales at the base. *Stamens* a little shorter than the petals; filaments filiform; anthers small, yellow, linear-oblong, versatile. *Ovary* ampullæform; style reaching to the top of the anthers; stigma of three crisped ovate lobes. *Capsule* twice as long as the calyx.—*J. G. Baker.*

Fig. 1, a scale from the base of the petal; 2, a couple of stamens; 3, pistil; 4, horizontal section of ovary; 5, stigma:—*all more or less magnified.*

J N Fitch Lith

Vincent Brooks Day & Son Imp

L Reeve & Cº London

MORMODES Ocanæ.

Native of New Grenada.

Nat. Ord. Orchideæ.—Tribe Vandeæ.

Genus Mormodes, *Lindl.*; (*Reichb. in Walp. Ann.* vol. vi. p. 577.)

Mormodes *Ocanæ*; pseudobulbis oblongo-ellipsoideis basibus membranaceis foliorum fere obtectis, foliis pedalibus 1½-poll. latis elongato-lanceolatis acuminatis, pedunculo valido inclinato fusco-virescente, racemo 6–10-floro bracteis oblongis obtusis cymbiformibus, floribus subfasciculatis aurantiacis punctis maculisve parvis fusco-sanguineis creberrime undique irroratis, sepalis petalisque consimilibus lanceolatis acuminatis, labello longe unguiculato trilobo, lobis lateralibus brevibus oblongis obtusis intermedio majore subquadrato rostrato marginibus omnium recurvis.

M. Ocanæ, *Lindl. and Reichb. f. mss. in Walp. Ann.* vol. vi. p. 577; *Reichb. f. in Gard. Chron.* 1879, p. 582 *et* 817, fig. 133, 134.

Of the genus *Mormodes* seven species are now figured in this work; *M. pardina* (Tab. 3879 and 3900), *M. Cartoni* (Tab. 4214), *M. lentiginosa* (Tab. 4455), *M. atropurpurea* (Tab. 4577), *M. Greenii* (Tab. 5802), *M. Colossus* (Tab. 5840), and the subject of the present plate, all of them differing remarkably from *M. Ocanæ*, both in the form of the perianth-segments and their colouring, but agreeing in the singular arrangement of the column, which is twisted one quarter round so as to bring the anther to face sideways, and to afford a landing-place to insects close to or upon the anther itself. In *M. Ocanæ* the slender beak of the column, to which the anther case is hinged, rests on the side of the mid-lobe of the lip, and when touched the whole anther with its broad strap and gland is released from the column with a jerk, and is, according to Dr. Reichenbach, frequently tossed into the concavity of the lip itself; for that learned author remarks (Gard. Chron. l. c. 582) that the three lobes of the lip form as many bags, in one of which he always found a pollen-apparatus; and he

adds that these bags may be regarded as show-rooms for insects which can carry away those bodies (the pollen) strongly glued to them by their viscid glands. For a complete account of the structure and formation of the lip and pollen apparatus of *Mormodes* I must refer to Mr. Darwin's work on "The Fertilization of Orchids" (p. 208), where it is shown how perfectly all the parts are contrived and arranged to cause the pollen to alight on an insect visiting the flower, and to be thence carried to other flowers in a position to secure their fertilization.

M. Ocanæ was discovered by the collector Schlim in the province of Ocaña, at elevations of 4000 to 5000 feet, and subsequently collected by M. Kalbreyer. The specimen here figured was cultivated by Messrs. Veitch, with whom it flowered magnificently in October, 1879.

DESCR. *Pseudo-bulbs* elliptic-oblong, slightly compressed, three to three and a half inches long, almost clothed with the appressed sheathing membranous leaf-bases. *Leaves* about a foot long by one and a half inches broad, narrowly lanceolate, acuminate. *Scape* very robust, with the raceme about a foot long, inclined, pale greenish-brown; sheaths short, broad, loose, truncate. *Raceme* six to ten-flowered; bracts half an inch long, oblong, obtuse, boat-shaped. *Flowers* subfascicled, about two inches in diameter and three when spread out, uniformly of a dark orange-yellow colour most closely speckled with red-brown spots. *Sepals* and *petals* similar, lanceolate, acuminate, concave, drooping. *Lip* as long as the petals, claw long; blade three-lobed, lateral lobes short oblong rounded at the tip, mid-lobe subquadrate abruptly beaked; all the lobes have incurved margins.—*J. D. H.*

Fig. 1, lip and column; 2, pollen apparatus; 3, column; 4, anther-case:—*all enlarged.*

1

2.

M.S. del J.N. Fitch Lith.

L. Reeve & Cº London.

Vincent Brooks Day & Son Imp

Tab. 6197.

GENTIANA septemfida, *var.* cordifolia.

Native of Asia Minor.

Nat. Ord. Gentianeæ.—Tribe Swertieæ.

Genus Gentiana, *Linn.*; (*Benth. et Hook.f. Gen. Pl.* vol. ii. p. 815.)

Gentiana (Pneumonanthe) *septemfida;* caulibus e collo nudo erectis v. ascendentibus simplicibus foliosis, foliis superne sensim majoribus ovato-cordatis subacutis 5-nerviis patulis deflexisve, summis flores sessiles confertos subinvolucrantibus, marginibus lævibus v. scaberulis, calycis laciniis anguste linearibus lanceolatisve tubo æquilongis v. brevioribus sinubus latis, corollæ clavatæ cyaneæ lobis brevibus ovatis subacutis, plicis fimbriato-multifidis.

G. septemfida, *Pall. Fl. Ross.* vol. ii. p. 101, t. 92; *Ledeb. Fl. Ross.* vol. iii. p. 67; *Boiss. Fl. Orient.* vol. iv. p. 74.

G. fimbriæplica, *C. Koch in Linnæa*, vol. xxiii. p. 584.

Var. β. cordifolia; foliis latioribus brevioribus obtusioribus basi evidentius cordatis, *Boiss. l. c.* p. 75.

G. cordifolia, *C. Koch, l. c.* p. 585.

G. gelida, *Paxton Mag. Bot.* p. 5, *with plate.*

On first seeing this beautiful plant, I did not suspect its kinship with *Gentiana septemfida*, of which two forms, equally dissimilar from one another and from this, and both very inferior to it, are figured at Tabs. 1229 and 1410; and I was further deceived by the name of *G. gelida* being attached to it. On comparison with the published descriptions of the gentians, I find that this is undoubtedly *G. cordifolia* of C. Koch, which is rightly reduced by Boissier to a variety of *septemfida*, from which latter, in all its forms, *G. gelida* differs only in its ochroleucous flowers and the entire or two-fid plaits between the lobes of the corolla, and may be a mere variety of this. Both these species are described as having the leaves scabrid on the margin, a character which I do not observe in either the living or Herbarium specimens. The corolla-lobes in the typica forms vary from five to seven, whence the specific name. *Gentiana septemfida* has a wide range in distribution from

Tauria and the Caucasus to Persia and the Altai mountains, ascending to 9000 feet in the Caucasus, and the var. *cordifolia* inhabits the mountains of Armenia. I am, unfortunately, unable to say whence the specimen here figured was procured, the drawing, with notes attached, having been lost in London after having been made use of by the colourist; it is, however, a well-known cultivated plant under the name of *G. gelida*, but it does not at Kew arrive at the stature of the specimen figured.

Descr. *Stems* several, ascending from a stout stock a foot high, stout, leafy throughout. *Leaves* gradually larger upwards, lowest a quarter of an inch long, upper one to one and a half inch long, all ovate-cordate, subacute, five-nerved, dark green above, spreading or deflexed, coriaceous, the upper often forming a sort of involucre. *Flowers* very numerous, in a compact rather elongate head, sessile or very shortly pedicelled, nearly two inches long. *Calyx-lobes* narrowly linear, equalling or shorter than the tubes. *Corolla* dark blue, clavate; lobes five, small, ovate, subacute, the membranous folds multifid. *Stamens* inserted about the middle of the tube. *Stigmas* short, recurved. *Capsule* shortly stalked.—*J. D. H.*

Fig. 1, corolla laid open; 2, calyx and ovary:—*both enlarged*.

Vincent Brooks Day & Son Imp

L Reeve & Cº London

Tab. 6498.

RUELLIA Portellæ.

Native of South Brazil.

Nat. Ord. Acanthaceæ.—Tribe Ruellieæ.

Genus Ruellia, *Linn.*; (*Benth. et Hook. f. Gen. Pl.* vol. ii. p. 1077.)

Ruellia *Portellæ;* herbacea, erecta, ramosa, tota velutino-tomentella, ramis gracilibus teretibus, foliis oblongo-ovatis subacutis v. obtusis longe petiolatis basi acutis integerrimis supra saturate viridibus costa nervisque albis, subtus rubro-purpureis, floribus axillaribus solitariis sessilibus, bracteolis 2 foliaceis calycem æquantibus, calycis segmentis lanceolatis acuminatis, corollæ læte roseæ $1\frac{1}{2}$–$1\frac{3}{4}$-pollicaris tubo piloso supra medium lente incurvo dein sensim dilatato, limbi plani lobis subquadrato-rotundatis 2-fidis, staminibus subæquilongis, filamentis filiformibus rectis per paria contiguis, antheris breviter exsertis anguste oblongis, ovario sessili pilosulo loculis 6-ovulatis.

To pronounce a species of *Ruellia* as "hitherto undescribed" is no light matter, for the genus contains upwards of one hundred and fifty known species, which are described under various generic names and in many scattered works, often very imperfectly. Moreover, these have been referred, as often wrongly as rightly, to no less than fourteen genera, none of which should have been separated from *Ruellia*, and some of them to other genera, which have nothing to do with *Ruellia*. I fail to match it with the descriptions of any of the species of *Ruellia* (or *Dipteracanthus*, now united with *Ruellia*) in Martius's Flora Brasiliensis, where, if known in European Herbaria, this pretty plant would no doubt have been described. I have hence been compelled to give it a name, and have chosen for the purpose that of the donor, Señor Francisco Portella of Campos (Rio de Janeiro), who sent it in a ward's-case with various other valuable living plants of Brazil. It appears to be a very free-growing species, well adapted for winter decoration as a stove plant; and, like others of its order, requiring to be kept quiet when flowering and fruiting are over.

Descr. A slender much-branched erect herb, a foot high, all parts covered with a fine velvety pubescence;

branches slender, terete green. *Leaves* two to three inches long, very uniform, elliptic-ovate subacute, narrowed into a slender petiole half their own length, deep green above with a white band along the midrib and nerves, red-purple beneath. *Flowers* axillary, solitary, sessile. *Calyx* one-third to half of an inch long; segments narrowly lanceolate, acuminate, hairy. *Corolla* one and a half to one and three-quarters of an inch long, hairy externally, bright rose-pink; tube slender, gradually dilated from above the middle, where it is gently incurved; limb flat, an inch in diameter, of five nearly subquadrately rounded bifid segments. *Stamens* in contiguous nearly equal pairs, filaments slender quite straight; anthers linear-oblong, shortly exserted. *Ovary* ovoid, hairy; style slender, stigma shortly exserted.—*J. D. H.*

Fig. 1, portion of corolla and stamens; 2, anthers; 3, stigma; 4, base of calyx and ovary; 5, ovary cut longitudinally:—*all enlarged.*

A B del J.N Fitch, Lith

Vincent Brooks Day & Son Imp

L Reeve & Cº London.

TAB. 6499.

LYTHRUM GRÆFFERI.

Native of Southern Europe.

Nat. Ord. LYTHRARIEÆ.—Tribe LYTHREÆ.

Genus LYTHRUM, *Linn.*; (*Benth. et Hook. f. Gen. Pl.* vol. i. p. 779.)

LYTHRUM *Græfferi*; glabrum, caulibus gracilibus elongatis erectis v. diffusis acute angulatis foliosis, foliis sæpius alternis inferioribus lineari- v. rarius ovato-oblongis acutis v. obtusis basi rotundatis v. cordatis superioribus lineari-oblongis lanceolatisve, floribus axillaribus solitariis 10–12 meris, bracteolis 2 minutis lineari-subulatis, calycis dentibus triangularibus 6 majoribus erectis, petalis obovatis calyce duplo longioribus, staminibus longioribus exsertis.

L. Græfferi, *Tenore Fl. Nap. Prodr. Suppl.* vol. ii. p. 27; *Icon. Fl. Nap.* t. 142; *DC. Prodr.* vol. iii. p. 82; *Boiss. Fl. Orient.* vol. ii. p. 739.

L. thymifolia, *Allioni Fl. Ped.* vol. ii. p. 168, *non Linn.*

L. acutangulum, *Lagasc. Gen. et Sp.* p. 16.

L. flexuosum, *Lagasc. l. c.*; *? Regel Gartenfl.* vol. xix. p. 289, t. 664.

L. Preslii, *Guss. Pl. rar.* p. 188.

L. junceum, *Sol. mss. ex Trans. Camb. Phil. Soc.* vol. iv. p. 32; *Walp. Rep.* vol. ii. p. 105.

L. Græfferi is a South European plant, with a very extended geographical distribution, from the Azores and Canaries to Portugal and Morocco, and thence eastward to Asia Minor and Northern Syria. It does not occur anywhere north of the Alps except in Western France, but has been introduced into South America and other countries. It affects wet places, and when grown in a pot standing in a tank or pan of water, it forms a strikingly ornamental plant from the profusion of its bright pink blossoms, which stud the numerous slender branches, and which appear in succession for several weeks. The figure published as *L. Græfferii* in Loddige's Botanical Cabinet is unrecognizable, and from the small flowers and opposite leaves probably represents *L. hyssopifolium*, L. The figure of *L. flexuosum*, Lag., in Regel's Gartenflora, again, has most of the leaves opposite, and the petals very narrow, not like those of *L. Græfferi*.

JUNE 1ST, 1880.

I have retained the well-known and hitherto universally adopted name for this plant, though it can hardly be doubted that one of the earlier ones of Lagasca (*flexuosum* and *acutangulum*), published in 1814, is of earlier date. The descriptions, however, of Lagasca are very unsatisfactory, and he made two species out of the one. The Royal Gardens are indebted to Mr. Joad, F.L.S., of Wimbledon, for plants which flowered profusely during the month of August.

DESCR. A tall, very slender, much-branched diffuse or erect glabrous herb, a foot to a yard high; branches strict, acutely angled, leafy throughout. *Leaves* one-fourth to one inch long, all alternate or the lower opposite, more or less oblong or linear-oblong, the lower usually broader and sometimes cordate at the base, acute or obtuse, upper narrowly oblong. *Flowers* solitary in the axils of all the upper leaves, shortly pedicelled, two-bracteolate, six- rarely five-merous; bracteoles small, narrowly subulate. *Calyx* about a quarter of an inch long; tube slender and cylindric below the middle, then funnel-shaped; lobes twelve, six larger triangular acute erect, six interposed minute subulate spreading. *Petals* longer than the calyx, obovate, subacute, bright pink, nearly equal. *Stamens* twelve, the six longer exserted, the shorter included. *Ovary* slender, glabrous.—*J. D. H.*

Fig. 1, flower; 2, the same cut longitudinally; 3, stamens; 4, pistil; 5, transverse section of ditto:—*all enlarged.*

A.B. del. J.N. Fitch, Lith.

Vincent Brooks Day & Son Imp

L. Reeve & Co. London

TAB. 6500.

POLYGONUM AMPLEXICAULE.

Native of the Himalaya Mountains.

Nat. Ord. POLYGONEÆ.—Tribe EUPOLYGONEÆ.

Genus POLYGONUM, *Linn.*; (*Benth. et Hook. f. Gen. Pl.* vol. ii. p. 97.)

POLYGONUM (Bistorta) *amplexicaule*; caule elongato gracili erecto parce ramoso, foliis radicalibus et inferioribus longe petiolatis cordato-ovatis -lanceolatisve caudato-acuminatis minute crenulatis costa nervisque subtus minutissime papillosis supremis sessilibus amplexicaulibus, racemis solitariis v. 2-nis spiciformibus gracilibus elongatis densifloris, bracteis ovatis acuminatis imbricatis scariosis, perianthii segmentis oblongis obtusis, staminibus 8, antheris exsertis, stylis 3 capillaribus, fructibus trigonis.

P. amplexicaule, *Don. Prodr. Fl. Nep.* p. 70; *Meissn. Monog. Polyg. in Wall. Pl. As. rar.* vol. iii. p. 54; *Babingt. in Trans. Linn. Soc.* vol. xviii. p. 96; *Lindl. in Bot. Reg.* 1838, *Misc.* no. 117, *et* 1839, t. 46; *Meissn. in DC. Prodr.* vol. xiv. pars 1, p. 126.

P. speciosum, *Wall. Cat.* n. 1716; ***Meissn. ll. cc.***

P. ambiguum, *Meissn. in Wall. Pl. As. rar.* vol. iii. p. 54, *et in DC. Prodr. l. c.*; ***Wight, Ic. Pl. Ind. Or.*** t. 1797.

P. oxyphyllum, *Wall. Cat.* n. 1715; ***Meissn. ll. cc.***

P. petiolatum, *Don. l. c.* p. 70, ***teste Babingt.***

The Himalaya Mountains are as remarkable in a botanical point of view for the beauty of the colouring of the flowers of their Polygonums, as Japan is for the stature and noble foliage of some of the species of the same genus which it contains. Amongst the Himalayan kinds none exceeds *P. amplexicaule*, which is unrivalled for graceful habit, foliage, and colouring combined, and it is further a plant of such easy cultivation, that it ought to be a garden favourite. It occurs under two varieties, a white- and a red-flowered, of which the white has usually a longer and more slender raceme, with more distant flowers. These two varieties do not correspond to any two of the five species which have been founded on dried specimens of the plant, and

which I agree with Dr. Lindley in considering to be unworthy of varietal rank.

P. amplexicaule extends through the whole range of the Himalaya, from Murree in the extreme north-west, where it ranges from 6000 to 8000 feet of elevation, to Sikkim, where it reaches 11,000 feet and upwards; it does not occur in the Bhotan collections of Griffith, nor has it been found in the Kharia range. It was introduced into the Horticultural Society's gardens from those of Tahurunpore, by Dr. Falconer, in 1835 or 1836; but our figures are made from plants raised at Kew from seeds sent by Dr. Aitchieson, and it flowers in September and October.

Descr. *Stems* two to three feet high from a strong woody underground root-stock, very slender, green, sparingly leafy. *Leaves* cordate-ovate or- lanceolate, long-acuminate, the lower long-petioled, the upper sessile and amplexicaul, all minutely crenulate, glabrous above, beneath minutely papillar, especially on the midrib and nerves; ochreæ long, lacerate. *Racemes* solitary or two, on slender strict peduncles, strict erect, two to six inches long; bracteoles ovate, acuminate, scarious. *Flowers* crowded, bright rose-red or white, about one-third of an inch in diameter when expanded. *Perianth segments* oblong, subacute. *Stamens* eight; anthers exserted. *Styles* three, slender. *Ovary* three-gonous.—*J. D. H.*

Fig. A, white-flowered variety—*of natural size;* 1, flower cut longitudinally; 2 and 3, outer and inner perianth segments; 4, stamens; 5, pistil; 6, ovules:—*all enlarged.* Fig. B, red-flowered variety—*of natural size;* the numbers represent corresponding parts to those of A:—*all enlarged.*

A B and J N Fitch Lith

Vincent Brooks Day & Son Imp

L Reeve & Cº London

Tab. 6501.

BIGNONIA CAPREOLATA, *var.* atro-sanguinea.

Native of the Southern United States.

Nat. Ord. Bignoniaceæ.—Tribe Bignonieæ.

Genus Bignonia, *Linn.*; (*Benth. et Hook. f. Gen. Pl.* vol. ii. p. 1033.)

Bignonia *capreolata*, Linn. Sp. Pl. 870; Bot. Mag. t. 864; DC. Prodr. vol. ix. p. 146; Jacq. Hort. Schœnbr. t. 363; Chapm. Flor. S. U. States, p. 285; A. Gray, Fl. N. U. States, ed. 5, p. 321.

B. crucigera, Walt. Flor. Carolin. 169.

Var. *atro-sanguinea*; foliolis longioribus angustioribus, corolla intus et extus atro-purpurea, lobis brevibus triangulari-ovatis acutis.

This very remarkable and handsome variety of the well-known Cross-vine of the Southern United States has been long cultivated in the conservatory at Kew, and differs so widely from the typical form of the species, that but for numerous intermediates, of which we possess Herbarium specimens, it might be assumed to be a different species. The leaflets are both longer and narrower than is usual, but as these vary from those figured here to broadly oblong, no importance can be attached to the form of these organs. In the corolla the divergence from the type is more marked; in most of both wild and cultivated forms this organ is usually shorter, with five broad rounded and often notched widely-spreading lobes, so that the limb is an inch and a half in diameter, the colour being orange-yellow with red-purple on the tube; here, on the other hand, the corolla is wholly of a dark red-purple, with the tube nearly two inches long, and the lobes short, triangular-ovate, acute, and not one-third of an inch in breadth and length.

Now that attention has been called to the variation of this plant, no doubt other as great deviations from the type will be introduced into cultivation. Of these I have seen dried specimens of one, sent from Kentucky, which

has the corolla-tube one and a half inch long by fully two-thirds of an inch broad, and swollen like a campanula; another form has the corolla curved nearly into a quadrant.

Bignonia capreolata is one of the loftiest climbers in the forests of the Southern United States, from Virginia to Florida and westwards to the Mississippi, where it ornaments the rocks and trees by its luxuriant foliage and (usually) orange-yellow flowers. The American name of Cross-vine is given in reference to the wood of the stem, which on a transverse section presents the form of a cross.—*J. D. H.*

Fig. 1, Flower cut longitudinally; 2, anthers; 3, stigma; 4, vertical section of ovary:—*all enlarged.*

2.

1

3.

M.S del J.N.Fitch Lith.

Vincent Brooks Day & Son Imp

4

5.

Tab. 6502.

ODONTOGLOSSUM odoratum.

Native of Venezuela.

Nat. Ord. Orchideæ —Tribe Vandeæ.

Genus Odontoglossum, *H. B. et K.*; (*Lindl. Fol. Orchid. Odontoglossum.*)

Odontoglossum (Euodontoglossum) *odoratum*; pseudobulbis ovoideis compressis marginibus acutis sulcatis, foliis anguste ensiformibus pergamaceis, panicula amplissima multiflora, bracteis parvis, floribus 1½–2 poll. expans. luteis rubro-fusco maculatis, sepalis petalisque consimilibus anguste lanceolatis longe acuminatis incurvis undulatis v. suberispatis, labello hastato lobis lateralibus brevibus rotundatis intermedio elongato late subulato longe attenuato puberulo disco 4-dentato, columna supra medium anguste alata alis dentatis apice cirrhis **2 divaricatis incurvis margine inferiore 1-dentatis aucta.**

O. odoratum, *Lindl. Orchid. Linden.* No. 86; *Fol. Orchid. Odontoglossum*, p. 3.

A many-flowered sweet-scented species of *Odontoglossum*, discovered in the humid and gloomy forests of the Sierra Nevada of Merida, at an elevation of 7000 to 8000 feet, by Linden. It belongs to the section with *O. Hallii*, Lindl.; *O. nævium*, Lindl.; and others which constitute the genus *Odontoglossum* as first known and described. All have slender spreading ears at the top of the column, which sometimes end in bristle-like appendages. The specimen figured flowers in the Royal Gardens in March, and, though not previously figured, is well known in cultivation.

Descr. *Pseudo-bulbs* two to three inches long, narrowly ovoid, compressed, two-edged, grooved. *Leaves* a foot long and under, by one inch broad, narrowly ensiform, acute, hardly coriaceous, rather the consistence of parchment, pale green. *Panicle* stalked, sometimes three feet long by one and a half broad, copiously branched, many-flowered; bracts small, membranous. *Flowers* one and a half to two inches broad, dull golden-yellow, blotched with brownish-red. *Sepals* and *petals* similar, narrowly lanceo-

late, finely acuminate, incurved, waved or almost crisped. *Lip* as long as the sepals, hastate; lateral lobes short, rounded; terminal broadly subulate, narrowed to a fine point, pubescent, waved, its disk with two pair of longitudinal obtuse erect teeth. *Column* with very narrow toothed wings above the middle, and two long incurved spur-like appendages from the apex, which end in very fine subulate points, and have a single tooth on the lower margin.—*J. D. H.*

Fig. 1, Lip and column; 2, front view of column; 3, anther-case; 4 and 5, lateral and front views of column:—*all enlarged*.

Tab. 6503.

POLYGONUM cuspidatum.

Native of Japan.

Nat. Ord. Polygonaceæ.—Tribe Eupolygoneæ.

Genus Polygonum, *Linn.*; (*Benth. et Hook. f. Gen. Plant.* vol. ii. p. 97.)

Polygonum (Pleuropterus) *cuspidatum*; glaberrimum, caulibus e rhizomato subterraneo perplurimis fasciculatis elatis robustis inclinatis foliosis, foliis petiolatis late cordato-ovatis v. ovatis basi late truncata acuminatis utrinque elevato-reticulatis, ochreis brevissimis deciduis, racemis axillaribus folio brevioribus sessilibus solitariis simplicibus v. basi ramosis v. paniculatis ramis divaricatis, bracteis ovatis obtusis 1-plurifloris rachique puberulis, pedicellis capillaribus infra medium articulatis, calyce fructifero obcordato late 3-alato, stylis 3 brevibus.

P. cuspidatum, *Sieb. et Zucc. Fl. Jap. Fam. Nat.* 2, p. 84; *Meissn. in DC. Prodr.* xiv. pars 1, p. 136; *Regel, Gartenfl.* vol. ix. p. 152, t. 291; *Grœnl. in Rev. Hortic.* 1858, p. 30, *cum Ic.*; *Miq. Prolus. Fl. Jap.* p. 300; *Franch. et Savat. En. Pl. Jap.* vol. i. p. 404.

P. Sieboldi, *de Vriese in Ned. Kruidk. Arch.* vol. ii. p. 254, *et in Jahrb. Kon. Ned. Maatsch.* 1850, *cum Ic.*; *Lindl. et Paxt. Mag. Bot.* vol. i. p. 137, *cum Ic.*; *Fl. Gard.* 1852, part i. p. 137, f. 90.

Under *P. compactum*, figured at Tab. 6476 of this volume, I have alluded to that plant as possibly a form of *P. cuspidatum*, differing very much in habit; but a re-examination of the Garden and Herbarium specimens tends to show them to be specifically distinct, especially in the form of the fruiting calyx, which in *P. cuspidatum* is obcordate and much narrowed at the base, but in the native specimen of *P. compactum* is almost orbicular, and abruptly narrowed into the pedicel; the crisped margins of the leaves, too, are apparently a permanent character of the latter-named species. There is still a third species of this group to figure, the *P. sachaliense*, the largest of all, and of which a drawing is prepared for this work.

P. cuspidatum is a native of Japan, and there is in the Herbarium a very similar plant from North China, collected by Dr. G. Shearer at Kieu Kiang; the specimens of this

are, however, not sufficiently good to pronounce upon, and the racemes from which the flowers have fallen are much shorter and more fascicled.

This species was introduced into England many years ago; it has been cultivated for a quarter of a century at Kew, to which it was, I believe, sent from Holland. Like the rest of the half-shrubby species, it flowers very late in the season, and is dicœceous.

Descr. A tall glabrous bushy herb, six feet high, with innumerable stout branching angular red-brown leafy stems rising in a tuft from an underground root-stock which sends out innumerable runners. *Leaves* three to four inches long and sometimes almost as broad, usually broadly ovate-cordate, and abruptly acuminate, sometimes almost orbicular, often truncate at the base with rounded angles, firm, reticulated, dark green, paler beneath; petiole one quarter to one inch long; ochreæ short, caducous. *Racemes* puberulous, axillary, sessile or subsessile, shorter than the leaves, usually paniculately branched at the base, the branches spreading and given off so low down that the racemes appear fascicled; bracts small, obtuse; pedicels slender, jointed below the middle. *Flowers* dicœceous, white. *Perianth* one quarter of an inch in diameter; segments broadly elliptic, obtuse, concave. *Stamens* six or seven, imperfect in the female flower. *Styles* three, short, cuneate. *Fruiting perianth* obcordate, three outer sepals broadly winged, about one-third of an inch long, gradually narrowed into the capillary pedicel. *Nut* small, trigonous, shining.—*J. D. H.*

Fig. 1, Female flower; 2, longitudinal section of the same:—*both enlarged*.

A.B. del. J.N.Fitch Lith.

Vincent Brooks Day & Son Imp.

L. Reeve & Co. London

Tab. 6504.

CAMPANULA fragilis.

Native of South Italy.

Nat. Ord. Campanulaceæ.—Tribe Campanuleæ.

Genus Campanula, *Linn.*; (*Benth. et Hook. f. Gen. Plant.* vol. ii. p. 561.)

Campanula (Eucodon) *fragilis*; glabra pilosa v. pubescens, caulibus gracilibus diffusis, foliis longe petiolatis cordato-ovatis v. summis ovatis grosse crenato-dentatis, floribus axillaribus v. apices versus ramorum laxe corymbosis, lobis calycinis lineari-lanceolatis acuminatis corollam subæquantibus integris sinubus nudis, corolla late explanata ad medium 5-fida, lobis late ovatis acutis, stylo elongato, stigmatibus 3.

C. fragilis, *Cyrill. Plant.* fasc. i. p. 32, t. 11, f. 2; *Tenore Fl. Nap.* t. 119; *A. DC. Monog. Campan.* p. 306; *Prodr.* vol. vii. p. 476; *Lindl. in Bot. Reg.* t. 1738.

C. diffusa, *Vahl Symb.* p. 18.

C. cochlearifolia, *Vahl l. c.* p. 18.

C crassifolia, *Nees Syll. Ratisb.* i. p. 6; *et Amœn. Bot.* fasc. 2, p. 9, t. 1.

C. Cavolini, *var. a, Tenore Syll.* p. 94.

C. Barrelieri, *Presl. Symb. Bot.* p. 30, t. 19.

C. saxatilis rotundifolia, &c., *Barr. Pl. Obs.* p. 10, t. 453.

C. rotundifolia Cajetana, &c., *Cup. Pamph.* vol. i. t. 192; *Bocc. Ic. rar.* p. 54, t. 27.

It is somewhat singular that so long-known and beautiful a herbaceous plant as the subject of the present plate should be seldom seen in cultivation. The only figure of it given in an English work is that of a smaller flowered more hairy variety by Lindley in the "Botanical Register," who says of it: "In its native stations it is one of the most lovely objects imaginable. Often have we heard travellers from Italy expatiating upon the beauty of the spots which are enamelled with the bright blue flowers of this interesting stranger, but it was never our good fortune to see it alive, till we met with it in the garden of Mrs. Marryatt at Wimbledon."

The specimen here figured is of a large-flowered form, which I found in the garden of Miss Wedgwood, at Down,

in Kent. According to Alphonse De Candolle, it is a native of the evergreen region of Italy south of latitude 41°, and struggles through the lower woodland region up to the upper limits of the beech, about 3000 feet above the sea, growing in exceedingly dense tufts on limestone rocks. We have, however, specimens gathered by Mr. Grove at 5000 feet elevation, in the valley of Orfenda of the Abruzzi.

Descr. A glabrous hairy or pubescent decumbent herb, with slender branches six to ten inches long springing from a woody perennial root-stock. *Leaves* scattered, long-petioled; the lower ovate or rounded-ovate, acute or obtuse, coarsely crenate-toothed, shorter than the petioles, which are one and a half inch long; the upper narrower and shorter petioled. *Flowers* axillary and in lax terminal corymbs, pedicelled, bright pale blue. *Calyx-tube* sub-globose, grooved; lobes three-fourths the length of the corolla, linear-lanceolate, acuminate, quite entire, sinus without a fold. *Corolla* one and a half to two inches in diameter, almost flat, the tube being but slightly concave, five-lobed to about the middle; lobes broadly ovate, sub-acute. *Style* long, slender; stigmas three, oblong, obtuse. —*J. D. H.*

Fig. 1, Top of style and stigma:—*enlarged*.

A B. del J N Fitch Lith

Vincent Brooks Day & Son Imp

TAB. 6505.

BERBERIS BUXIFOLIA.

Native of Chili.

Nat. Ord. BERBERIDEÆ.—Tribe BERBEREÆ.

Genus BERBERIS, *Linn.*; (*Benth. et Hook. f. Gen. Plant.* vol. i. p. 43.)

BERBERIS *buxifolia;* erecta, glaberrima, foliis fasciculatis obovatis v. cuneato-obovatis obtusis acutis v. pungentibus coriaceis integerrimis v. paucidentatis sessilibus v. in petiolum angustatis, pedunculis solitariis 1-floris foliis longioribus, floribus aurantiacis sepalis 3 exterioribus ovatis quam interiora orbiculata retusa duplo brevioribus, petalis oblongis fusco-aurantiacis staminibus paulo longioribus, baccis globosis, stylo distincto valido, stigmate majusculo peltato.

B. buxifolia, *Lamk. Ill. Gen.* t. 253, f. 3; *DC. Prodr.* vol. i. p. 107; *Gay Fl. Chil.* vol. i. p. 91.

B. dulcis, *Sweet Brit. Fl. Gard.* Ser. 2, t. 100; *Paxt. Mag. Bot.* vol. x. t. 171.

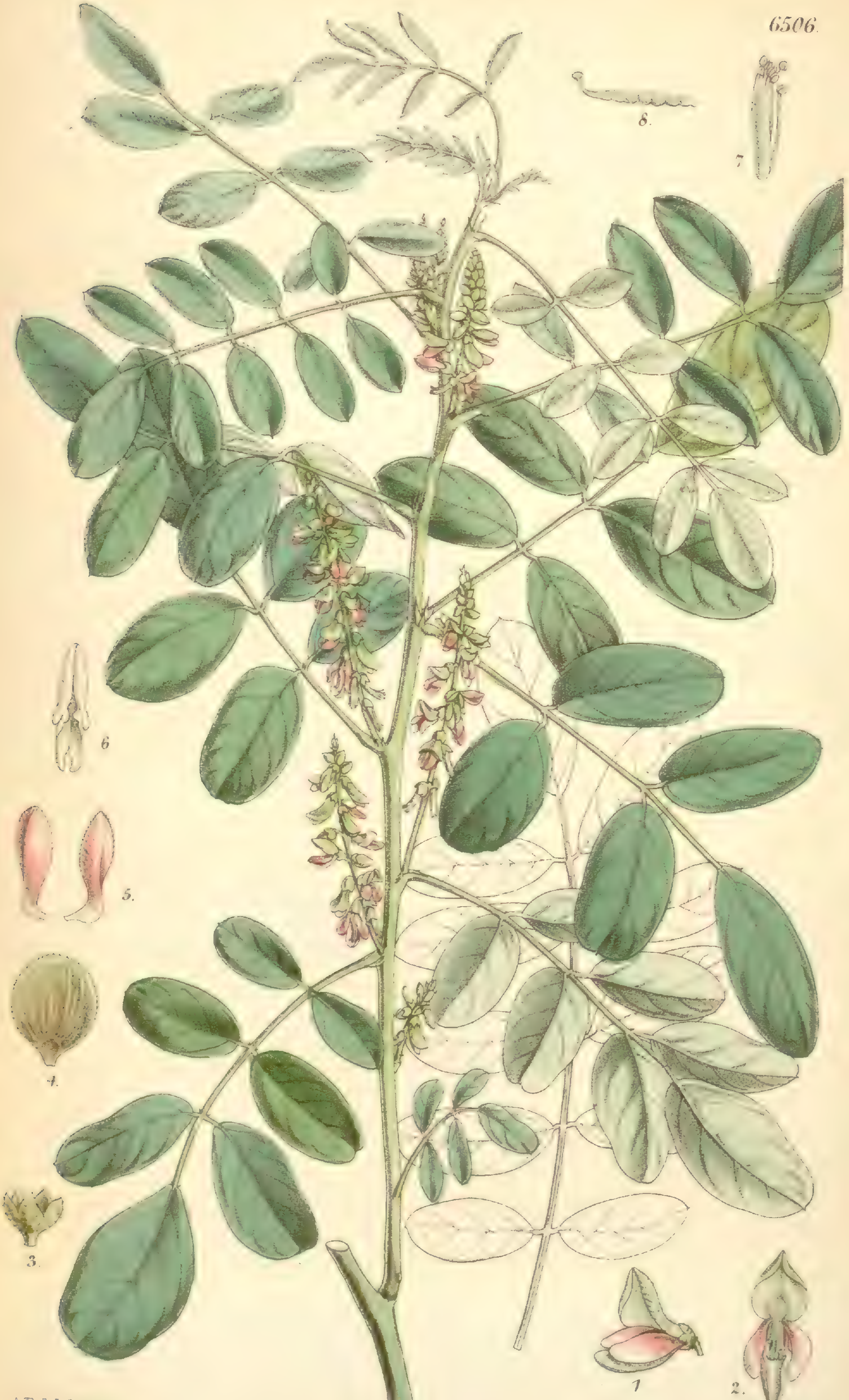
The nomenclature of the species of *Berberis* presents many difficulties, and though I am satisfied as to the present plant being the *B. buxifolia* of Lamarck, figured in his "Illustrations" in 1802, and *B. dulcis* of Sweet, published in 1838, I am not persuaded that it may not have an earlier name than either of these. The difficulties referred to arise from the extreme variability both of the foliage and the inflorescence. Of these the latter is used for sectional characters, according as the flowers are solitary, fascicled, or corymbose; but when the corymb is sessile, the flowers appear fascicled, and it is often the case that the flowers of the fascicles are reduced to one. Thus I in the "Flora Antarctica," and De Candolle in his Systema (vol. ii. p. 15), have referred to this species Forster's *B. microphylla*, a Fuegian plant, found by me as far south as Cape Horn itself, which has short three-flowered peduncles, which are often reduced to one-flowered ones, when it closely resembles *B. buxifolia*, but it differs in a character which is almost unique amongst the high

southern species of the genus, of the leaves, which are very small, being deciduous, and the flowers appearing with the very early leafy shoots. More similar still to the present plant is Ruiz and Pavon's *B. virgata* (Fl. Peru and Chili, vol. i. p. 51, tab. 281, f. B.), a native of the mountains of Peru; but here again the flowers (though described as solitary by De Candolle) are stated by its authors to be three, or sometimes two or four, and the peduncles are short, compared with those of *B. buxifolia.*

Berberis buxifolia ranges from Chili to the Straits of Magellan, and probably further south, but in Fuegia it is replaced by *B. ilicifolia* and *B. microphylla.* It was introduced into cultivation by seeds collected by Mr. Anderson, the botanical collector attached to Captain King's survey of the Magellan Straits, which were raised in Mr. Low's nursery at Clapton. It has long been cultivated at Kew. The berries are eatable.

Descr. An erect glabrous rigid shrub. *Leaves* tufted; one to one and a half inch long, very coriaceous, sessile or contracted into a petiole, obovate or cuneate-obovate, acute, obtuse or mucronate, quite entire or rarely with a few small spinous teeth, deep bright green. *Flowers* solitary on long stout glabrous or puberulous pedicels, which are longer, and sometimes twice as long as the leaves, globose, half an inch in diameter, orange-yellow. *Sepals* ovate, obtuse, three outer half as long as the inner, which are orbicular and retuse. *Berry* nearly globose, dark blackish-purple; style stout, distinct; stigma orbicular.—*J. D. H.*

Fig. 1, Flower cut longitudinally; 2, petal and stamen; 3, front and back view of stamens; 4, pistil:—*all enlarged.*



8.

7.

6

5.

4.

3.

1

2.

A B del. J.N.Fitch Lith

Vincent Brooks Day & Son Imp

L Reeve & Co London

Tab. 6506.

INDIGOFERA Anil.

Native of the West Indies.

Nat. Ord. Leguminosæ.—Tribe Galegeæ.

Genus Indigofera, *Linn.*; (*Benth. et Hook. f. Gen. Plant.* vol. i. p. 494.)

Indigofera (Euindigofera) *Anil;* suffrutescens, cano-puberula, foliis pinnatis, pinnis 3–7-jugis oppositis oblongis ellipticis obovatis v. lineari- v. obovato-oblongis obtusis v. retusis, stipulis subulatis, racemis subsessilibus erectis strictis folio brevioribus, calycis lobis triangularibus, vexillo parvo rotundato, alis anguste oblongis obtusis carinam æquantibus, legumine lineari-oblongo arcuato-recurvo rostrato obtuse 4-goni lævi 6–10-spermo sutura dorsali incrassato.

I. Anil, *Linn. Mant.* p. 272; *Sloane, Hist. Jam.* t. 179, f. 2; *Lamk. Encycl.* t. 626; *Dict. Sc. Nat.* t. 252; *Tratt. Archiv.* t. 72; *Tussac. Fl. Antill.* t. 72; *DC. Prodr.* vol. ii. p. 225, *excl. var.* γ; *Griseb. Fl. Brit. W. Ind.* p. 181; *Benth. in Mart. Fl. Bras. Legum.* p. 40.

I. uncinata, *G. Don Gard. Dict.* vol. ii. p. 208.

I. micrantha, *Desv. in Ann. Sc. Nat.* Ser. i. vol. ix. p. 410.

This, the indigenous Indigo of the West Indies, is the representative of the *I. tinctoria* or Indigo of the Old World; but both of these plants having been cultivated for some centuries for the extraction of the well-known dye, are now naturalized in the tropics of the Old and the New World. Of the two species, *I. tinctoria* was known for its product from very early times, being in use by the Egyptians and described by Dioscorides; whereas the *I. Anil* could not have been known in Europe or the East until after the discovery of America. An Indigo appears, however, to have been used by the natives of the New World before it was brought into competition with the plant of the Old; for Sloane (Hist. Jam. vol. ii. p. 37) says, "Robt. Tomson ap. Hakl. p. 454, found it about Mexico, where it is used to die blue." It is, however, very doubtful if the plant here alluded to be the *Indigofera Anil*. It is a somewhat singular fact that although the *Indigofera tinctoria* has been for so many centuries the only Indigo-plant known in the Old World, the first species recognized by botanists was the West Indian *I. Anil*.

July 1st, 1880.

According to Sir Jas. Smith (in Rees' Encyclopædia), Gerarde in 1597, and Johnson in 1632, knew nothing of any Indigo-plant, Parkinson in 1640 being the first to treat of it as "Indico or Indian Woad," giving a figure of the leaf from De Læt, and describing it, first from Ximenes in Læt's description of America, and secondly from Mr. William Finch, in Purchas' Pilgrims. Ray, in 1688, says that it is not agreed from what plant Indigo is made, and suggests that it is from a leguminous one allied to *Colutea*; he describes it from Hernandez and Margraaf, and subjoins the description of the (Indian) "Ameri" from Rheede's Hortus Malabarius. Here for the first time the American and Indian species are botanically both alluded to, though as one, nor were they distinguished till a much later period. Linnæus, in the 1753 edition of the Species Plantarum, describes only the Indian species, nor was it till the publication of his Mantissa, in 1771, that the American was recognized as different, by its much smaller flowers and more curved pods, which are even (not beaded). For further information on the much-vexed question of the *I. Anil*, I must refer to A. De Candolle's "Geographie Botanique," vol. ii. p. 855. Our figure of *I. Anil* is taken from a plant that flowered in the Economic House at Kew. The artist, Mrs. Barnard, observes that the petals of the keel separate elastically when touched.

Descr. An erect shrub, three to six feet high, faintly hoary, with appressed hairs which are attached by the middle. *Leaves* four to five inches long, pinnate; pinnules one to one and a half inches long, in three to seven pairs, variable in shape, from linear-oblong to obovate-oblong, or almost obcordate; stipules subulate. *Racemes* sessile, stiff, erect, much shorter than the leaves, many-flowered. *Flowers* a quarter of an inch long, shortly pedicelled. *Calyx* very short, with triangular teeth. *Standard* hairy on the back, orbicular, greenish, pale pink within. *Wings* oblong, pink, equalling the narrow keel. *Pods* numerous, an inch long, linear-oblong, obtusely four-angled, curved upwards, beaked, smooth, six- to ten-seeded.—*J. D. H.*

Fig. 1, Side, and 2, front view of flower; 3, calyx; 4, standard; 5, wings; 6, keel; 7, stamens; 8, pistil:—*all enlarged.*

7.

1. 3. 2. 4. 6. 5.

8.

11. 10.

9.

H.T.D. del. J.N.Fitch Lith.

Vincent Brooks Day & Son Imp.

L. Reeve & Co. London.

TAB. 6507.

BUCKLANDIA POPULNEA.

Native of the Eastern Himalaya.

Nat. Ord. HAMAMELIDEÆ.

Genus BUCKLANDIA, *Br.*; (*Benth. et Hook. f. Gen. Pl.* vol. i. p. 669.)

BUCKLANDIA *populnea*; arbor elata, ramulis articulatis, foliis alternis petiolatis late cordato-ovatis v. orbiculatis coriaceis palmatinerviis acuminatis integerrimis stipulisque sanguineo-coloratis junioribus 3-cuspidatis, petiolo terete elongato, stipulis 2-nis magnis oblique obovato-oblongis apice rotundatis crasse coriaceis nervosis ramulos juniores geniculatim inflexos pedunculosve amplectentibus, florum capitula globosa polygama v. unisexualia pedunculata pilosa, calycibus confluentibus connatis, calycis tubo ovario adnato, in fl. ♂ obscuro, limbo (v. disco) carnosulo truncato repando-2-lobo, petalis numero incertis 4–5 v. paucioribus lineari-spathulatis sæpe in stamina mutatis carnosulis, æstivatione incurvis v. in fl. ♀ sæpius rudimentaria, staminibus in fl. ♂ 10–14 in ♀ nullis, filamentis subulatis, antheris basifixis, ovario ½-infero 2-loculari, stylis 2 subulatis recurvis, capsula subglobosa, seminibus in loculis ad 6, superioribus osseis embryone 0, fertilibus superne longe alatis.

B. populnea, *Br. in Wall. Cat.* n. 7414, *et in Vermischte Schriften*, vol. v. p. 374; *Griff. in Asiat. Research.* vol. xix. t. 13, 14; *Hook. f. et Thoms. in Journ. Linn. Soc.* vol. ii. p. 86; *C. B. Clarke in Fl. Brit. Ind.* vol. ii. p. 429.

Liquidambar tricuspidata, *Miquel Fl. Ind. Bot.* i. pars i. 1097, Suppl. 139, 346, t. 4.

One of the most beautiful trees of the forests of the Sikkim Himalaya, at elevations of 4000 to 6000 feet; also not unfrequent in the Khasia mountains, where, however, it does not attain the same stature, in so far as I have seen; and of the mountains of Sumatra. From the elevations at which it grows in the Himalaya, there is no prospect of *Bucklandia* being hardy in England, but as a greenhouse ornament no plant of the class can be more attractive.

The trunk is cylindric and straight in well-grown trees, and, together with the oblong crown of evergreen foliage, attains 100 feet in height. The wood-vessels are annulate and the pith punctate as in the wood of *Magnoliaceæ*, which, with the remarkable stipules resembling those of *Liriodendron*, establish a resemblance between these other-

wise very different genera. Nothing can exceed the beauty of the young foliage of *Bucklandia*, and this has induced me to figure it for the Botanical Magazine without fresh flowers, which will probably not be produced for several years. The foliage figured is that of young trees, three to five feet high, at present standing on the shelves of the Temperate House at Kew, and which are about as many years old; they were raised from seeds sent by Dr. King, of the Calcutta Botanic Garden, and Mr. Gammie, of Darjeeling. The figure represents by no means the largest leaves on the plants, some of which are nearly a foot in diameter. The leaves of the young plant have often three to five cusps irregularly placed beyond the middle. Those of the full-grown tree are much smaller and are always entire and green.

Descr. A tall erect evergreen tree. *Leaves* long-petioled, four to six inches broad and rather longer, broadly ovate- or orbicular-cordate, acuminate, coriaceous, glossy green with red midrib and nerves, the young more or less deep blood-red throughout beneath, but above shot with green; petiole red, cylindric, two to three inches long; stipules in pairs, one to two inches long, obliquely oblong or broader upwards, coriaceous, nerved, closely applied face to face in the young state, and enclosing a young branch, or the inflorescence, which is sharply bent inwards. *Flowers* in globose unisexual or polygamous heads an inch in diameter, on bracteate silky simple or branched peduncles; bracts oblong, caducous. *Calyx-tubes* confluent; limb a five-crenate fleshy margin (perhaps the disk). *Petals* linear-oblong, very irregular in number, size, and position. *Stamens* numerous, filaments short, slender; anthers basifixed, oblong. *Ovary* two-celled. *Styles* two, divergent, subulate. *Capsules* in a globose head, each two-celled, with about six seeds in each cell; two upper seeds fusiform and angular, quite solid, without an embryo; lower with a long flat ascending wing from one side; embryo with oblong flattened cotyledons and a short superior radicle.—*J. D. H.*

Fig. 1, Male head; 2, petals; 3 and 4, stamens; 5, a female head; 6, disk and carpels; 7, vertical section of ditto, with petal; 8, transverse section of ditto; 9, fertile seed; 10, section of ditto; 11, embryo; 12, imperfect seed:—*all but figs.* 1 *and* 5 *enlarged.*

Tab. 6508.

STENOMESSON LUTEOVIRIDE.

Native of Ecuador.

Nat. Ord. Amaryllidaceæ.—Tribe Pancratieæ.

Genus Stenomesson, *Herb.*; (*Baker in Ref. Bot.* sub t. 308.)

Stenomesson (Coburgia) *luteo-viride;* bulbo globoso tunicis membranaceis brunneis collo elongato cylindrico semipedali, foliis synanthiis lineari-loratis viridibus, scapo ancipiti terminali sesquipedali, umbellis 5–6-floris pedicellis brevibus, spathæ valvis magnis ovato-lanceolatis, perianthio luteo-viridi 4-pollicari, ovario oblongo, tubo subcylindrico, segmentis oblongis cuspidatis tubo 2–3-plo brevioribus, filamentis dimidio inferiori in coronam coalitis margine inter filamentorum partem liberam dentibus deltoideis integris vel obscure dentatis prædito, antheris fulvis lineari-oblongis, stylo exserto.

This is a new species from the high Andes of Ecuador, which flowered for the first time in the spring of 1879 with Messrs. E. G. Henderson and Son, of the Pine Apple Nurseries, Maida Vale. It is nearly allied to the well-known *Coburgia trichroma* of Herbert (Bot. Mag. tab. 3867), and quite similar to it in its cultural and climatic requirements. The present plant differs from *trichroma* in the colour of its flowers and by its longer corona and more acute green leaves. There does not appear to be any valid character to separate *Coburgia* as a genus from *Stenomesson*, and the latter has the claim of priority. I do not think we can properly regard the first six species of *Coburgia* as admitted in Kunth's Synopsis as more than mere varieties of the plant that was first described by Ruiz and Pavon in 1802 under the name of *Pancratium variegatum*.

Descr. *Bulb* globose, two or three inches in diameter, with thin brown membranous tunics, which extend up the cylindrical neck to a length of six or eight inches. *Leaves* about four, contemporary with the flowers in spring, linear-lorate, fleshy, bright green, glabrous, a foot long at the flowering-time, an inch broad, narrowed gradually to the

point. *Scape* green, ancipitous, produced from the end of the neck of the bulb, a foot and a half long. *Umbel* five- or six-flowered; pedicels very short; spathe-valves ovate-lanceolate, green at the flowering-time, two or three inches long. *Ovary* oblong-trigonous, green, half an inch long; perianth-tube subcylindrical, greenish-yellow, between two and three inches long; segments oblong, cuspidate, permanently ascending and much imbricated, yellow with a distinct green keel, an inch long. *Corona* green, half an inch long, inserted at the throat of the perianth-tube, furnished with a simple or obscurely toothed deltoid process between the base of the free portion of each filament; anthers fulvous, linear-oblong, versatile, under half an inch long. *Style* finally much longer than the perianth; stigma capitate.—*J. G. Baker.*

Fig. 1, Section of flower :—*of the natural size.*

Vincent Brooks Day & Son Imp

L.Reeve & Co. London

Tab. 6509.

EPIMEDIUM Perralderianum.

Native of Algeria.

Nat. Ord. Berberideæ.—Tribe Berbereæ.

Genus Epimedium, *Linn.*; (*Benth. et Hook. f. Gen. Plant.* vol. i. p. 44.)

Epimedium *Perralderianum;* sparse patentim pilosa, foliis 3-foliolatis, foliolis coriaceis perennantibus cordato-ovatis acutis ciliato-dentatis, sinu elongato angusto, auriculis rotundatis, pedunculo radicali petiolo æquilongo, racemo multifloro glanduloso-piloso, pedicellis gracilibus horizontaliter patentibus, floribus aureis, sepalis extimis minutis oblongis obtusis caducis, intimis fere orbicularibus horizontalibus late imbricatis, petalorum lamina erecta margine dentata, calcare incurva robusta obtusa laminæ æquilonga, staminibus petalis triplo longioribus flavis.

E. Perralderianum, *Cosson in Kralik Pl. Alger. Sel. exsicc. No.* 100, *et in Bull. Soc. Bot. France*, vol. ix. p. 167 (1867); *Baker in Gard. Chron.* 1880, p. 683.

This is the African representative of the Persian and Caucasian *Epimedium pinnatum*, tab. 4456, from which it is distinguished by its leaves being invariably only tri-foliolate, and by its much more strongly ciliate-toothed leaflets, which are perennial, and when young of a beautiful bronze-colour shot with green. In the form and colouring of the sepals and petals these two species are so alike that they can hardly be ranked higher than geographical forms, and it is far from improbable that specimens connecting them will be found in Southern Europe, if not in Africa. The texture of the leaves is so firm that even in this climate they persist during the winter.

Epimedium Perralderianum is a native of the mountain-woods of Babor, Foughell and Tababor in Eastern Khabylie, at elevations of 3000 to 5000 feet, whence it was introduced into cultivation by Dr. Cosson. The plants from which our figure is taken are perfectly hardy in Kew, and were presented by Dr. Reichenbach.

August 1st, 1880.

The species is named by Dr. Cosson after H. de Perraudière, one of his companions during an expedition into the mountains of Eastern Khabylie in 1861, when the species was discovered. It flowers early in June.

Descr. Sparsely clothed with spreading lax scattered hairs. *Leaves* 3-foliolate, petiole slender, rigid, flexuous, a span long and under; leaflets rigid, coriaceous, two to three inches long by one and a half to two broad, ovate-cordate or orbicular-ovate, acute, acutely closely ciliate-toothed, basal sinus deep narrow, the rounded basal lobes sometimes overlapping, rigid, when young of a fine red bronze colour shot with green; petiolules one to one and a half inch long. *Scape* equalling the leaves, springing directly from the root-stock, many-flowered; raceme glandular-pubescent, twelve- to twenty-flowered; pedicels slender, one-third to two-thirds of an inch long, horizontal; bracts small, caducous. *Flowers* bright yellow, three-quarters to two-thirds of an inch in diameter. *External sepals* minute, oblong, caducous; inner orbicular or broadly oblong, horizontally spreading, broadly imbricate. *Petals* with a cucullate toothed lamina; spur stout, obtuse, cylindric, incurved, about as long as the blade. *Stamens* twice as long as the petals; anthers narrowly linear. *Ovary* cylindric, undulate on the ventral face; style incurved.—*J. D. H.*

Fig. 1, Petal; 2, stamens; 3, ovary:—*all enlarged*.

1.

2

5

3

6.

H.T.D. del. J.N.Fitch Lith

Vincent Brooks Day & Son Imp

I. Reeve & Co. London

Tab. 6510.

CHIONOGRAPHIS Japonica.

Native of Japan.

Nat. Ord. Melanthaceæ.—Tribe Helonieæ.

Genus Chionographis, *Maxim.*; (*Baker in Journ. Linn. Soc. Lond.* vol. xvii. p. 469.)

Chionographis *japonica*; glaberrima, foliis radicalibus rosulatis sessilibus v. in petiolum angustatis late v. anguste elliptico-oblongis v. elliptico-lanceolatis acutis plus minusve dentatis costa distincta nervis valde obliquis caulinis linearibus, scapo angulato, spica brevi et oblonga v. elongata erecta multiflora, rachi acute angulata, perianthii albi segmentis 4 v. 6 anguste linearibus obtusis a basi ad apicem obtusam sensim dilatatis, 2 superioribus longioribus, 2 inferioribus minutis v. obsoletis, filamentis brevissimis crassis, antheris didymis subextrorsum dehiscentibus, ovario subgloboso 3-lobo 3-loculare, stigmatibus 3 clavellatis, ovulis in loculis 2 medio angulo interiori affixis anatropis, micropyle lata supera, raphe ventrali.

C. japonica, *Maximowicz in Bull. Acad. Sc. St. Petersb.* vol. vi. p. 209 (Dec. iii.); *Franch. et Sav. Enum. Pl. Jap.* vol. ii. p. 86; *Baker in Journ. Linn. Soc.* vol. xvii. p. 469.

Melanthium luteum, *Thunb. Fl. Jap.* p. 152.

M. japonicum, *Willd. in Berl. Mag.* vol. ii. p. 22.

Helonias? japonica, *Schultes fil. Syst. Veg.* vol. vii. p. 1567; *Kunth. Enum.* vol. iv. p. 175.

Chamælirion luteum, *Miq. in Ann. Mus. Lugd. Bat.* vol. iii. p. 144, *non A. Gray.*

Though originally described by Thunberg nearly a century ago, this is a very rare and little-known plant, of which we have seen no native specimens but those collected by Maximovicz in 1863, and one communicated by Captain Blomfield, R.N., in 1873. It is referred by Mr. Baker in his valuable paper on the aberrant tribes of *Liliaceæ* to the group *Helonieæ*, and its immediate affinity is with the Eastern N. American genera *Helonias* and *Chamælirium*. It is the only species of the genus.

This very singular plant was raised from seed sent by Mr. Maries to Messrs. Veitch, with whom it flowered in April of the present year.

Descr. A quite glabrous perennial herb, six to twelve

inches high, with rosulate radical leaves, and a simple slender leafy scape, bearing a spike of white flowers with very long perianth-segments and minute stamens. *Leaves*, radical two to three inches long, sessile or narrowed into a stout or slender petiole, variable in shape, from linear-oblong to broadly elliptic, acute, irregularly toothed or almost entire, dark green on both surfaces, midrib very distinct, nerves very oblique; cauline leaves linear, quite sessile. *Scape* strict, acutely angled, as is the rachis of the spike. *Spike* at first oblong, obtuse, usually lengthening to four or five inches, strict, erect, many-flowered. *Flowers* quite sessile and appressed to the rachis; bracts and bracteoles none. *Perianth* about three-quarters of an inch in diameter across the segments, pure white; segments six, or four, the two lower being suppressed, or three, with the three lower suppressed, all widely spreading, strict, narrowly linear, but slightly dilated from the base to the obtuse point; two upper (when four or six) the longest, about half an inch long; two lateral about one-third shorter, ascending; two lower very short, deflexed. *Stamens* six, filaments very short and stout; anther-cells reniform, adnate to the filament, bursting outwards. *Ovary* globose, three-lobed, three-celled; stigmas three, recurved, club-shaped, obtuse; ovules two in each cell, adnate to the middle of the inner angle, anatropous, with ventral raphe and superior large open micropyle.—*J. D. H.*

Fig. 1, Flower with three perianth-segments seen in front; 2, another with six seen from the back; 3, back and front view of stamen; 4, ovary; 5, section of the same; 6, ovule:—*all enlarged.*

1.

2.

Vincent Brooks Day & Son Imp

Tab. 6511.

AGAVE horrida.

Native of Mexico.

Nat. Ord. Amaryllidaceæ.—Sub-order Agaveæ.

Genus Agave, *Linn.*; (*Kunth Enum.* vol. v. p. 818.)

Agave (Littæa) *horrida*; acaulis, foliis 30–40 dense rosulatis ensiformibus subpedalibus apice spina pungente corneo magna armatis margine lato corneo griseo cinctis aculeis magnis distantibus inæqualibus armato, pedunculo foliis 3–4-plo superante, bracteis vacuis subulatis squarrosis, floribus in paniculam subspicatam densam cylindricam aggregatis geminis breviter pedunculatis et pedicellatis, bracteis parvis linearibus, ovario cylindrico-trigono, tubo brevi late infundibulari, segmentis oblongis purpureo-viridibus, staminibus ad tubi faucem insertis segmentis 2–3-plo longioribus, stylo demum filamentis æquilongo.

A. horrida, *Lemaire*; *Jacobi Monog.* pp. 43 and 207; *Nachtrage*, p. 15; *K. Koch in Wochenschrift*, vol. xii. p. 177; *Baker in Gard. Chron.* n. s. vol. vii. (1877), p. 621, fig. 99.

A. Regeliana and Desmetiana, *Hort. non Jacobi.*

This is one of the best known of the smaller Agaves with a distinct continuous horny border to the leaf. It was introduced from Mexico by Verschaffelt in 1862, and is now to be found in all the more complete collections, but usually under the name either of *Regeliana* or *Desmetiana*, both of which rightfully belong to species of another section. I am not aware that there is any record of its having flowered. Our drawing was made from a plant in the collection so liberally lent to Kew by J. T. Peacock, Esq., of Hammersmith, which has been on exhibition for a considerable time in the south wing of the Temperate House, where it flowered in the spring of this present year. The flowers are notably proterandrous, the style not reaching its full length, nor the stigma becoming papillose, till long after the anthers of the same flower are withered. I believe that *A. triangularis*, *grandidentata*, and *Maigretiana* of Jacobi, and *A. Gilbeyi* of Haage and Schmidt, will all prove to be forms of this species.

August 1st, 1880.

Descr. Acaulescent. *Leaves* thirty or forty in a dense rosette, ensiform, about a foot long, two inches broad, rigid in texture, flat and bright green on the face, duller green on the back, the point armed with a large pungent spine, the edges margined with a continuous distinct persistent grey horny border, which is furnished with numerous irregular large falcate brown horny prickles. *Peduncle* three or four times as long as the leaves, furnished with abundant subulate squarrose empty bracts. *Spike* cylindrical, about as long as the peduncle, seven or eight inches in diameter when the flowers are fully expanded; flowers arranged in pairs, each flower with a distinct pedicel, and each pair with a short peduncle and small linear bract. *Ovary* green, cylindrical-trigonous, under an inch long; tube funnel-shaped, a quarter of an inch long; segments oblong, green tinged with claret-purple, as long as the ovary. *Stamens* inserted at the throat of the perianth-tube; filaments claret-purple, two inches long; anthers linear-oblong, half an inch long. *Style* finally as long as the filaments, but not till after the anthers have withered.—*J. G. Baker.*

Fig. 1, View of plant—*much reduced;* 2 and 3, portions of leaves; 3, flowers; 4, section of flower:—*all of the natural size.*

L. Reeve & Co. London

Tab. 6512.

CRINUM Kirkii.

Native of East Tropical Africa.

Nat. Ord. Amaryllidaceæ.—Tribe Amaryllideæ.

Genus Crinum; *Linn.*; (*Kunth Enum.* vol. v. p. 547.)

Crinum *Kirkii;* bulbo magno globoso collo elongato, foliis lorato-lanceolatis acuminatis 3–4-pedalibus viridibus recurvatis margine distincte ciliatis, scapo crasso compresso sesquipedali, umbellis sessilibus 12–15-floris, spathæ valvis magnis rubellis, perianthii 9–10-pollicaris tubo cylindrico viridulo curvato, limbi cernui segmentis oblongo-lanceolatis acuminatis tubo paulo longioribus albis dorso carinâ distincta coccinea decoratis, staminibus limbo distincte brevioribus, stylo staminibus longiori stigmate capitato.

This is a very fine new *Crinum* of the *ornatum* group, of which the bulb was sent home about two years ago by Dr. Kirk from Zanzibar. It flowered for the first time at Kew in the autumn of 1879. Its nearest ally is *C. Forbesianum*, from Delagoa Bay, which was lost for a long time, but which we have again lately received and flowered. The present plant has flowers as large and as brightly coloured as in the finest forms of *ornatum*, but may be recognized at a glance by its short very stout peduncle and very large acuminate leaves, with a distinctly ciliated edge.

Descr. *Bulb* globose, six or seven inches in diameter, with membranous pale-brown outer tunics and a neck half a foot long and about three inches in diameter. *Leaves* about a dozen to a rosette, developed at the same time as the flowers, lorate, acuminate, three or four feet long, four or four and a half inches broad in the lower half, narrowed gradually from the middle to the point, bright green, reflexing in an early stage, undulated towards the margin and conspicuously ciliated with minute white bristles. *Peduncles* two or three to a bulb, compressed, about a foot

September 1st, 1880.

and a half long, an inch in diameter. *Flowers* twelve to fifteen in a sessile centripetal umbel; spathe-valves deltoid, red-brown, membranous, three or four inches long. *Perianth* nine or ten inches long; tube cylindrical, suberect, curved, greenish, rather shorter than the cernuous limb, the segments of which are oblong-lanceolate, acuminate, an inch or an inch and a quarter broad at the middle, pure white, with a very distinct broad crimson stripe down the keel. *Stamens* declinate, more than an inch shorter than the perianth segments; anthers linear, versatile, half an inch long. *Style* overtopping the stamens; stigma small, capitate.—*J. G. Baker.*

Fig. 1, Whole plant, *much reduced in size;* 2, margin of leaf, *magnified.*

A B. del, J.N. Fitch Lith

Vincent Brooks Day & Son Imp

L. Reeve & Co. London.

Tab. 6513.

CITRUS TRIFOLIATA.

Native of Japan.

Nat. Ord. Rutaceæ.—Tribe Aurantieæ.

Genus Citrus, *Louriero;* (*Benth. et Hook. f. Gen. Pl.* vol: i. p. 305 et 992.)

Citrus *trifoliata;* glaberrima, spinosa, foliolis ellipticis subacutis v. obtusis crenulatis, floribus subsessilibus solitariis 4–5-meris, sepalis oblongo-ovatis concavis, petalis multo longioribus obovatis concavis, filamentis subæqualibus basi dilatatis, disco annulari.

C. trifoliata, *Linn. Sp. Pl.* 1101; *Franch. et Sav. Pl. Jap.* vol. i. p. 74.

C. trifolia, *Thunb. Fl. Jap.* p. 294.

Ægle sepiaria, *DC. Prodr.* vol. i. p. 538.

Pseudægle sepiaria, *Miq. in Ann. Mus. Lugd. Bat.* vol. ii. p. 83; *Kæmpf. Amæn.* p. 801, t. 802.

This singular and free-flowering shrub is much less known than it deserves to be, it being, in fact, almost unknown in English gardens, though perfectly hardy, free-flowering, and sweet-scented. It has stood unprotected in the open border of the Arboretum of Kew for several years, and hitherto has been quite uninjured, even the tender young shoots resisting the early frosts and long-protracted cold of the last two inclement seasons; a fact the more singular when it is considered that the whole plant is evergreen in respect of leaves, branches, and spines, though the leaves are deciduous.

C. trifoliata is a native of Japan, where it is much cultivated both as a garden plant and for fences; its fruit, which resembles a small orange, is described as very bitter, and having laxative properties. As an early-flowering and sweet-scented hardy shrub, this *Citrus* is likely to prove a favourite, and should it be eventually unable to withstand a winter of unusual severity in the open border, it may still be safe on a wall with or without protection. The flowers

appeared in the middle of May of this very backward year, but no fruit has been formed; the leaves were not fully developed till the end of June. It need hardly be stated that the five-petalled variety is much more attractive than the four-petalled.

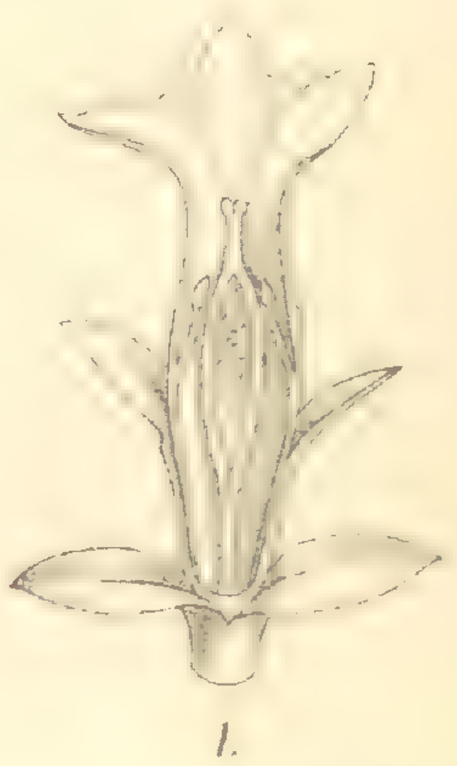
Descr. A glabrous shrub, three to five feet high, with stout spreading terete smooth green shining branches, and strong straight thorns an inch long and upwards. *Leaves* appearing after the flowers, three-foliolate; petiole about half an inch long, flattened; leaflets elliptic, sessile, crenulate, obtuse, emarginate, coriaceous, dotted with pellucid oil-glands; lateral often oblique, about one inch, the terminal one and a half inch long. *Flowers* solitary in the axils of the spines, very shortly pedicelled, about one inch in diameter. *Sepals* four or five, small, oblong, concave, deciduous. *Petals* four or five, two-thirds of an inch long, obovate, almost clawed, concave, incurved, snow-white. *Stamens* eight, or ten, inserted in a thick annular pubescent disk, filaments flattened, connate at the base, reddish below the middle; anthers oblong. *Ovary* globose, two or more celled pubescent; and stigma very short, crenate; ovules one in each cell. *Fruit* a small orange.—*J. D. H.*

Fig. 1, Vertical section of flower; 2, stamen; 3, disk and ovary; 4, vertical section of the same; 5, transverse section of ovary:—*all enlarged.*

2

3

4



1.

A B del, J N Fitch Lith

Vincent Brooks Day & Son Imp

L. Reeve C° London

Tab. 6514.

GENTIANA ornata.

Native of the Himalaya.

Nat. Ord. Gentianeæ.—Tribe Swertieæ.

Genus Gentiana, *Linn.*; (*Benth. et Hook. f. Gen. Pl.* vol. ii. p. 815.)

Gentiana (Pneumonanthe) *ornata*; caulibus e radice perennanti decumbentibus gracilibus foliosis, foliis parvis ovato- v. oblongo-lanceolatis linearibusve margine cartilagineis lævissimis, floribus sessilibus terminalibus solitariis, calycis 5-fidi lobis ovato- v. lineari-lanceolatis corollam dimidiam æquantibus, corolla cærulea, tubo subcylindraceo inflato v. subinfundibulari striato, lobis 5 parvis triangulari-ovatis acutis plicis triangularibus obtusis integris multo longioribus, antheris liberis, capsula fusiformi pedicellato corollæ æquilonga, seminis testa lamellato-rugosa exalata.

G. ornata, *Wall. Cat.* n. 4386; *Griseb. in DC. Prodr.* vol. ix. p. 110.
Pneumonanthe ornata, *Don Gard. Dict* vol. iv. p. 194.

This beautiful little Gentian is a native of the rich alpine meadows of the Himalaya, where it represents the *G. frigida* of the Hungarian Alps, and from which it differs in the cartilaginous margins of the leaves, and the absence of the filamentous remains of old stems on the summit of the root-stock, as also in the colour of the corolla, which is of an intense blue, not white, like the European species.

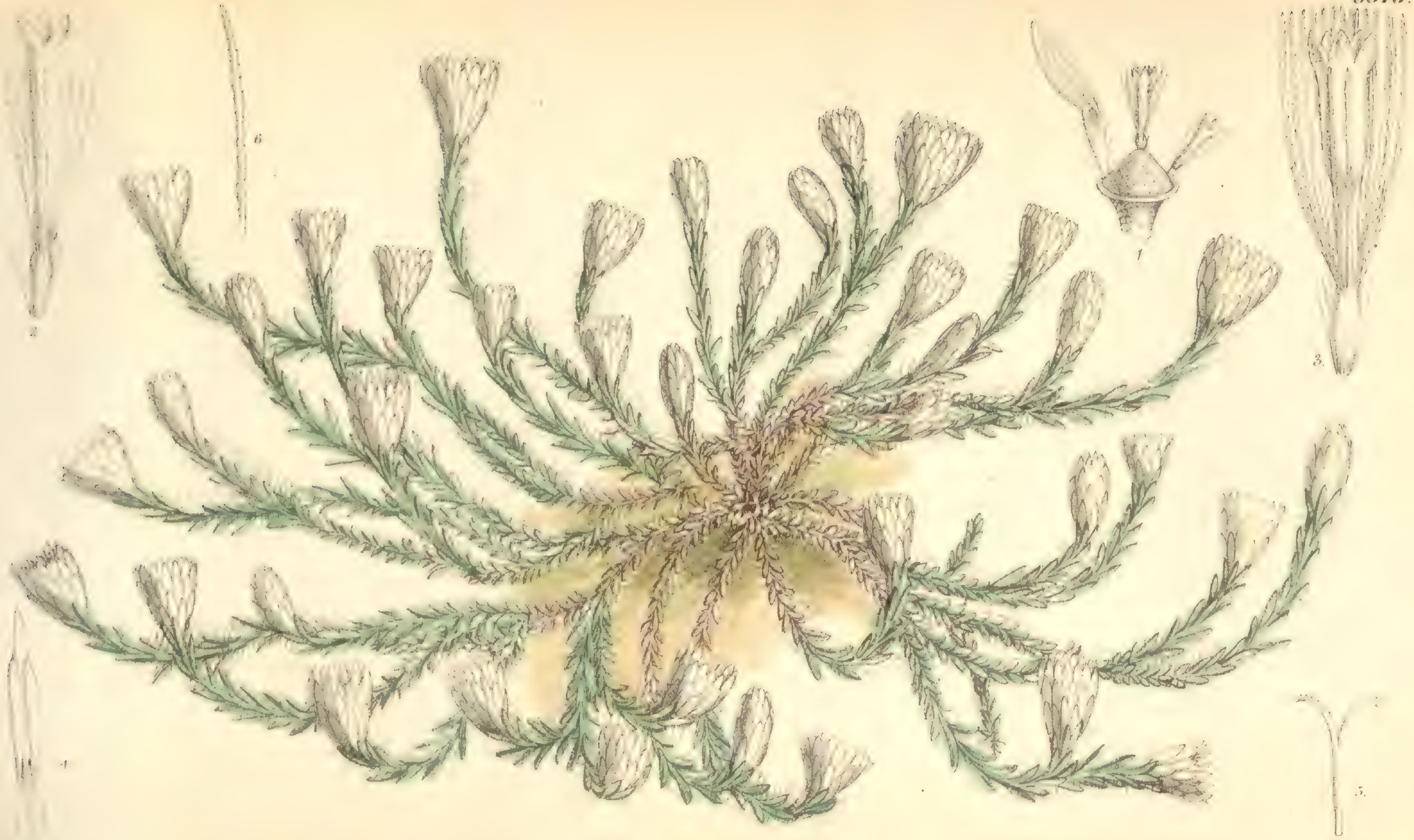
The *G. ornata* is confined to the central and eastern Himalaya; it was discovered by Wallich's collectors in Central Nepal, and I have gathered it abundantly in Sikkim at elevations of 13,000 to 16,000 feet.

I am indebted to Mr. Sadler, of the Edinburgh Botanical Gardens, for sending the specimen here figured, which flowered in May. Some of the native specimens have much longer, narrower, and acuminate leaves, and more funnel-shaped corollas.

Descr. *Stems* numerous, three to five inches long, spreading from the root-stock, decumbent with ascending

tips, sparingly branched, slender, leafy, red. *Leaves* half an inch long, ovate-lanceolate or linear-lanceolate, acute, acuminate or obtuse, deep green with a pale midrib, margin narrowly cartilaginous, quite smooth. *Flowers* solitary and sessile at the ends of the branches, an inch long. *Calyx-tube* narrowly campanulate; lobes five, similar to the leaves, half as long as the corolla, spreading stellately. *Corolla-tube* subcylindric, a little inflated, whitish striped with blue; lobes five, small, triangular-ovate, acute, intensely blue, much longer than the small entire obtuse folds. *Stamens* inserted about the middle of the tube; anthers free. *Ovary* fusiform, stipitate, stigmas revolute. *Capsule* fusiform, enclosed in the corolla-tube, and as long as it is. *Seeds* with a lamellate rugose testa, not winged.—*J. D. H.*

Fig. 1, Flower vertically cut open, with two uppermost leaves of the branch 2, stamen; 3, lip of ovary and stigmas; 4, ovules:—*all enlarged.*



J.N.Fitch Lith.

Vincent Brooks Day & Son Imp

L.Reeve & Cº London

TAB. 6515.

HELICHRYSUM FRIGIDUM.

Native of Corsica.

Nat. Ord. COMPOSITÆ.—Tribe INULOIDEÆ.

Genus HELICHRYSUM, *Gærtn.*; (*Benth. et Hook. f. Gen. Pl.* vol. ii. p. 309.)

HELICHRYSUM (Xerochlæna) *frigidum;* perenne, herbaceum, pumilum, cæspitosum, ramis decumbentibus molliter argenteo-sericeis, foliis laxe imbricatis linear-oblongis obtusis integerrimis, capitulis terminalibus solitariis sessilibus basi tomentosis, involucri bracteis lineari-oblongis obtusis, interioribus albis elongatis stellatim patentibus, achæniis sericeis, pappi setis paucis 1-seriatis scaberulis.

H. frigidum, *Willd. Sp. Pl.* vol. iii. p. 1908, *and DC. Fl. Franc.* vol. iv. p. 131; *Prodr.* vol. vi. p. 177; *Gren. et Godr. Fl. Franc.* vol. ii. p. 186.
Gnaphalium bellidiflorum, *Viv. Fragm.* p. 16, t. 19.
Xeranthemum frigidum, *Lab. Pl. Syr. Dec.* vol. ii. p. 9, t. 4.

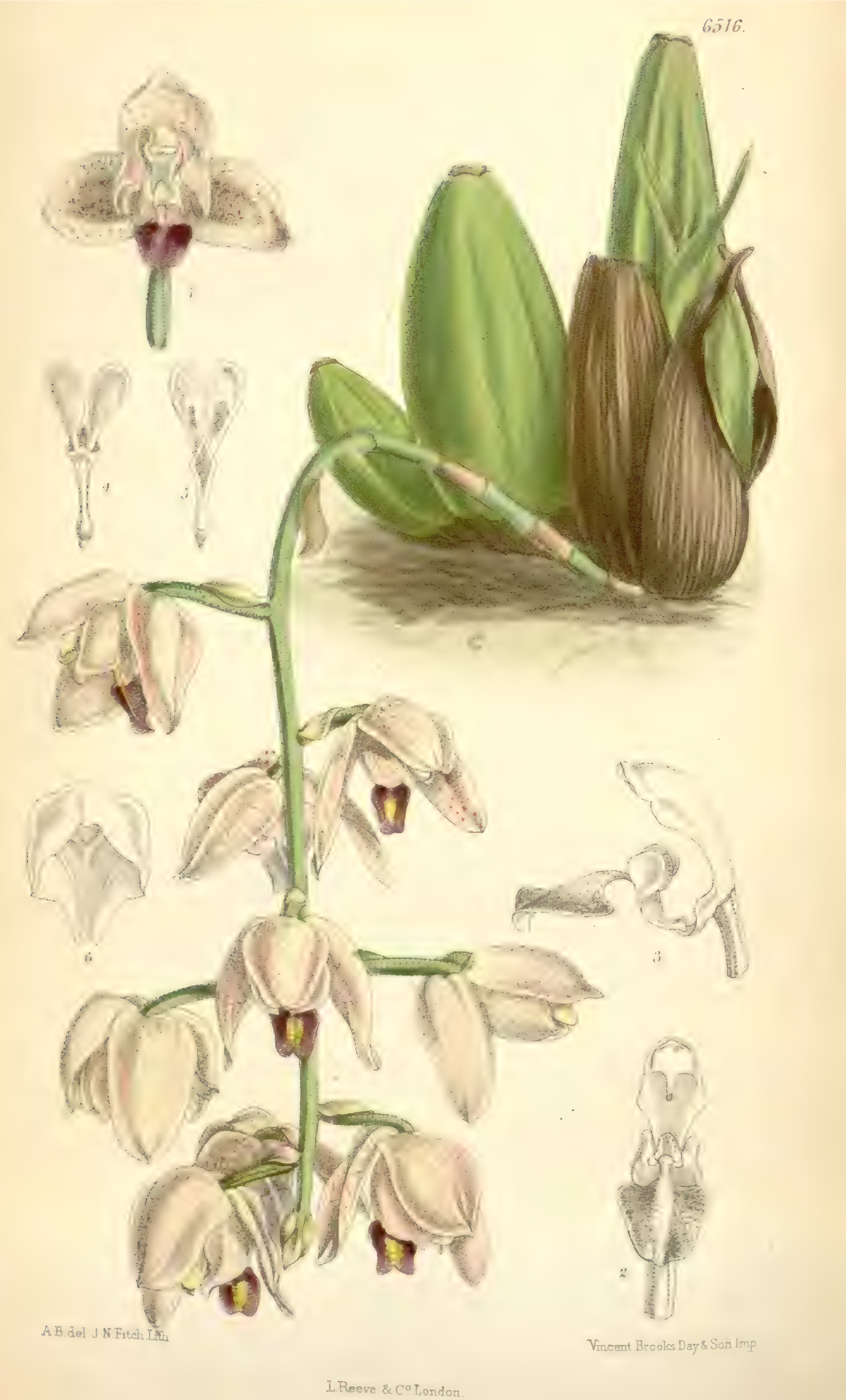
A very remarkable and scarce little alpine plant, found hitherto nowhere but in the mountains of Corsica, at elevations reaching to 6000 feet. It was long supposed to be also a native of Syria, it being described and figured by the Syrian traveller Labillardiere (under the name of *Xeranthemum frigidum*) as being found by him on Mount Lebanon as well as in Corsica, and we have in the Kew Herbarium a specimen of it from Labillardiere's own herbarium, communicated by the late Mr. Webb, who obtained the herbarium by purchase, and left it by will to Florence, but it is not stated whether it is from Corsica or Lebanon; as however it is identical with specimens from the first-named country, it may be assumed to be a copatriot. Boissier, in his Flora Orientalis (vol. iii. p. 239), states under *H. Billardieri* (a Lebanon species and very different from *H. frigidum*) that *H. frigidum* is erroneously ascribed to the Lebanon, and this is the general and, no doubt, correct opinion.

I am indebted to Messrs. Backhouse for the opportunity

of figuring this beautiful little plant, which flowered at the York Nurseries in May, 1879.

Descr. A tufted low herb; stems three to four inches long, decumbent, slender, spreading from the perennial root, then ascending, clothed with soft silky silvery hairs. *Leaves* one-fourth to one-third of an inch long, lower much shorter, loosely imbricating all round the stem and branches from their bases to their tips. *Heads* solitary, terminal, sessile, one-third to two-thirds of an inch in diameter.. *Involucre* obconic; bracts linear-oblong, obtuse, imbricate in many series, woolly, the innermost half an inch long and spreading, opaque and white for half their length. *Receptacles* conical, smooth, naked. *Flowers* of the ray in several series, tubular, slender, three-toothed; of the disk larger, narrowly funnel-shaped, five-lobed, glabrous. *Anther-cells* with slender tails. *Style-arms* truncate. *Pappus-hairs* few, in one series, very slightly thickened towards the tip, scabrid.—*J. D. H.*

Fig. 1, Receptacle with an inner involucral bract and flower of ray and of the disk; 2, flower of ray and, 3, of the disk; 4, stamen; 5, style-arms; 6, hair of pappus:—*all enlarged.*



A.B. del. J.N. Fitch Lith.

Vincent Brooks Day & Son Imp.

L. Reeve & Co. London.

Tab. 6516.

LACÆNA spectabilis.

Native of Mexico.

Nat. Ord. Orchideæ.—Tribe Vandeæ.

Genus Lacæna, *Lindl.*; (*Walp. Ann.* vol. vi. p. 612.)

Lacæna *bicolor*; pseudobulbis oblongo-ovoideis compressis lævibus, foliis magnis petiolatis elliptico-lanceolatis plicatis nervosis, pedunculo basi pseudobulbi enato, racemo puberulo pendulo 8–10 floro, bracteis oblongis ovario brevioribus, perianthio galeato pallide roseo v. albo puncticulis rubro-purpureis asperso, sepalis subæqualibus orbiculari-ovatis obtusis concavis, petalis brevioribus unguiculatis trulliformibus obtusis conniventibus, labello unguiculato basi articulato lobis lateralibus rotundatis incurvis, terminali trulliformi unguiculato retuso purpureo dense punctulato, disco inter lobos laterales cornuto, columna superne ampliata, polliniis 2 pyriformibus, stipite lineari superne dilatato, glandula parva.

L. spectabilis, *Reichb.f. in Bonpland.* vol. ii. p. 92; *Walp. Ann.* vol. vi. p. 612.
Nauenia spectabilis, *Klotzsch in Otto et Dietr. Allg. Gartz.* 1853, 193.

A very little-known genus, of which only two species have been discovered, the present and *L. bicolor*, on which the genus was founded by Lindley (Bot. Reg. 1844, t. 50), and which is a native of Guatemala. The present is by very much the handsomer species of the two, and is remarkable for the delicate colouring of the perianth, which in *L. bicolor* is of a greenish-yellow hue, and not speckled in the lip. The two species differ widely, this having a much longer claw, a horn, concave in front, between the lateral lobes, and a stipitate mid-lobe; whilst that of *L. bicolor* has a very short claw, a beard between the lateral lobes, and an almost sessile mid-lobe.

Lindley, who named the genus, called it by one of the names of Helen (Lacæna), because of its beauty; a compliment which the Botanical Register's representative of *L. bicolor* does not at all merit; he adds, however, that it may also be derived from λακίς, a cleft, in allusion to the divisions of the lip.

L. spectabilis flowered at Kew in the spring of this year;

the Royal Gardens are indebted to Dr. Wendland, of the Royal Gardens of Herrnhausen, Hanover, for the plant.

Descr. *Pseudo-bulbs* narrowly ovoid, three to four inches long, smooth (till aged), compressed. *Leaves* elliptic-lanceolate, acuminate at both ends, nerved, plaited. *Peduncle* from the base of the pseudo-bulb, ascending, then decurved with a pendulous raceme of nine or more flowers, stout, pubescent; bracts half an inch long, oblong, appressed to the pubescent ovary, and shorter than it. *Perianth* galeate, one inch in diameter, white suffused with pink, sprinkled with minute purple specks. *Sepals* orbicular-ovate, obtuse, concave. *Petals* smaller, clawed, trulliform, obtuse, connivent. *Lip* equalling the petals, clawed; claw slender, articulate with the base of the column; lateral lobes rounded, incurved, disk between them with a prominent horn that is concave in front; mid-lobe stipitate, trulliform, closely speckled with purple. *Column* winged, hooded at the top. *Pollen-masses* two, narrowly pyriform; pedicel linear, dilated upwards, gland very small.—*J. D. H.*

Fig. 1, Front view of flowers with the sepals spread out; 2, ditto of column and lip; 3, side view of column and lip; 4 and 5, front and back view of pollinia; 6, anther:—*all but fig.* 1 *enlarged.*

L.Reeve & Co. London.

Tab. 6517.

SALVIA hians.

Native of Kashmir.

Nat. Ord. Labiatæ.—Tribe Monardeæ.

Genus Salvia, *Linn.*; (*Benth. et Hook. f. Gen. Pl.* vol. ii. p. 1191.)

Salvia (Drymosphace) *hians*; herbacea, erecta, villosa, caule robusto 4-gono, foliis longe petiolatis deltoideo-ovatis basi truncatis v. hastatis acutis v. acuminatis crenato-dentatis rugosis, racemis simplicibus v. compositis, verticillastris 6-floris, calycis campanulati striati colorati glutinosi labio superiore integro truncato, inferiore æquilongo dentibus triangulari-ovatis acutis, corolla azurea tubo calyce triplo longiore subinflato, limbo brevi hiante, labio superiore brevi 2-lobo lobis acutis, inferioris lobis lateralibus brevibus reflexis, intermedio late obcordato pubescente.

S. hians, *Royle et Benth. in Hook. Bot. Misc.* vol. iii. p. 373; *Ill. Himal. Bot.* t. 757; *Lindl. Bot. Reg.* 1841, t. 39; *Benth. in DC. Prodr.* xii. 276.

S. macrophylla, *Tausch in Flora*, 1842, p. 282 (?).

A very handsome perennial, of which seeds, collected in Kashmir, were sent to Kew by Dr. Aitchison in 1877. He describes it as growing profusely in grassy marshes, at elevations of from 8,500 to 11,000 feet, and flowering in July and August. It was first found by Royle's collectors, sent from the Saharunpore Gardens to Kashmir, and flowered at the Royal Horticultural Society's Gardens in 1840, whence the figure in the Botanical Register was made; but neither this figure, nor Royle's, gives any idea of the intense sapphire-blue of the corolla. It has also been collected in Kashmir by Jacquemont and Falconer, and, as one of the most beautiful plants of that botanically rich valley, it can hardly escape the notice of future collectors. Dr. Lindley describes it as "one of the gayest of our perennials, in consequence of the striking contrast between the white and blue of its large flowers."

The specimen here figured flowered in the herbaceous grounds at Kew in June of the present year.

October 1st, 1880.

Descr. A villous perennial, two to three feet high, with stout erect four-angled stems. *Leaves* three to five inches long, long-petioled, deltoid-ovate, acute or acuminate, base truncate with rounded lobes or hastate with acute spreading lobes, rugose, pubescent on both surfaces; petiole four to eight inches long. *Raceme* simple or branched at the base, eight to twelve inches long, very villous; lower whorls of flowers distant, with leafy bracts; false-whorls six-flowered; flowers shortly pedicelled. *Calyx* half an inch long, glutinous, subcampanulate, green below, dark above; lips short, broad, acute, lobes bifid. *Corolla* large, one inch long and nearly as broad across the mouth, bright blue, except the white mid-lobe of the lip; tube three times as long as the calyx, broad, rather inflated; upper lip short, bifid, with acute lobes; lower with broad short revolute side lobes, and a large broadly-obcordate pendulous mid-lobe. *Anthers* exserted; connective of sterile anther-cells short. *Style* slender, much exserted.—*J. D. H.*

Fig. 1, Vertical section of flower; 2, portion of corolla and stamen:—*both a little enlarged.*

A B del J N Fitch Lith

Vincent Brooks Day & Son Imp

Tab. 6518.

a. TULIPA BIFLORA.
b. TULIPA ILIENSIS.

Natives of Siberia and Turkestan.

Nat. Ord. Liliaceæ.—Tribe Tulipeæ.

Genus Tulipa, *Linn.*; (*Baker in Journ. Linn. Soc.* vol. xiv. p. 275.)

Tulipa *biflora*; bulbo parvo ovoideo tunicis intus lanosis, caulibus gracilibus puberulis sæpissime 2–3-floris, foliis 2–3 linearibus, perianthii parvi segmentis lanceolatis acutis subconformibus intus albidis basi luteis dorso viridulo et purpureo tinctis, staminibus perianthio triplo brevioribus, filamentis basi pilosis, antheris parvis, ovario oblongo-trigono, stigmatibus parvis.

T. biflora, *Linn. Suppl.* p. 106; *Pallas Iter App.* no. 86, tab. D, fig. 3; *Lindl. Bot. Reg.* t. 535; *Regel in Act. Hort. Petrop.* vol. ii. p. 444; *Baker in Journ. Linn. Soc.* vol. xiv. p. 292.

Orithyia biflora, *Kunth Enum.* vol. iv. p. 227.

Tulipa *iliensis*; bulbo parvo ovoideo tunicis intus sursum parce setosis, caulibus gracilibus unifloris sursum puberulis, foliis 3–4 linearibus viridibus glabris, perianthii parvi citreni segmentis exterioribus oblongis subacutis interioribus obovatis obtusis, staminibus perianthio subduplo brevioribus, filamentis glabris antheris duplo longioribus, ovario oblongo-trigono, stigmatibus parvis.

T. iliensis, *Regel in Act. Hort. Petrop.* vol. vi. fasc. ii. p. 301; *Gartenfl.* tab. 975, fig. c, d; tab. 982, fig. 4, 5, 6; *Descr.* fasc. vii. p. 220.

The two plants represented in this plate are amongst the least showy species of the genus. *T. biflora* has been long known, but is very seldom seen in cultivation. It is spread from the Volga through the western half of Siberia. It is notable in the genus for producing normally more than a single flower. It has a woolly bulb, like *montana*, but otherwise its affinity is with *sylvestris* and *australis*. The drawing was made from a plant sent up by Mr. George Maw from his garden at Broseley.

T. iliensis is one of the numerous new species that have lately been discovered by the Russian explorers in Central Asia. Its alliance is close with *T. triphylla*, Bot. Mag.

tab. 6549. In their flowers and leaves these two resemble *australis*, but the stamens are like those of *Gesneriana*. The drawing was made from a plant sent by Mr. F. W. Burbidge, which flowered in the garden of Trinity College, Dublin, last February.

DESCR. T. BIFLORA. *Bulb* small, ovoid, the thin tunics woolly inside. *Stems* under a foot long, slender, slightly pilose, bearing usually two or three, rarely four or five flowers. *Leaves* two or three, linear, reaching in cultivation a length of six or nine inches. *Perianth* in cultivation about an inch long, white inside, with a yellow throat, tinted outside with green and purple; segments lanceolate, acute, the two rows nearly alike in shape. *Stamens* about a third as long as the perianth; filaments with a tuft of hairs at the base; anthers small, linear-oblong. *Ovary* oblong-cylindrical; stigmas small, sessile.

T. ILIENSIS. *Bulb* small, ovoid, the tunics furnished with a few adpressed hairs on the inside towards the tip. *Stem* slender, one-flowered, under a foot long, slightly downy upwards. *Leaves* three or four to a stem, linear, acuminate, green, glabrous, six to twelve inches long, under half an inch broad. *Perianth* an inch long, lemon-yellow; outer segments oblong, subacute; inner obovate-cuneate obtuse. *Stamens* about half as long as the perianth-segments; filaments linear, glabrous, orange-yellow, twice as long as the anthers. *Ovary* oblong-trigonous, badly developed in the specimen drawn; stigmas small.—*J. G. Baker*.

---

a, Fig. 1, Whole flower, in section, *natural size*; 2, a single stamen, *magnified*.
b, Fig. 1, whole flower, in section, *natural size*.

3

2.

A.B. del. J.N.Fitch Lith.

Vincent Brooks Day & Son Imp

Tab. 6519.

PRUNUS DIVARICATA.

Native of the Caucasus.

Nat. Ord. Rosaceæ.—Tribe Pruneæ.

Genus Prunus, *Tourn.*; (*Benth. et Hook. f. Gen. Pl.* vol. i. p. 609.)

Prunus *divaricata*; arbor parva, fere inermis, a basi ramosa, coma rotundata, ramis valde elongatis divaricatis inferioribus horizontalibus fere prostratis, ramulis glabris gracillimis, foliis planta florente elliptico-lanceolatis acuminatis costa nervisque subtus tomentosis glabratisve demum late ovatis ovato-cordatisve acuminatis serrulatis glabris, gemmis floriferis 1-floris, pedunculis brevibus glabris, floribus ½-poll. diam., petalis rotundatis v. obovatis concavis, ovariis 1–2, drupa ellipsoidea v. globosa flava, putamine lævi, ellipsoideo utrinque obtuso compresso sed turgido.

P. divaricata, *Ledeb. Ind. Sem. Hort. Dorpat.* 1824, *Suppl.* p. 6; *Fl. Alt.* vol. ii. p. 211, *in nota*; *Flor. Ross.* vol. ii. p. 5; *Ic. Fl. Ross.* t. 13; *DC. Prodr.* vol. ii. p. 534; *C. Koch, Dendrolog.* vol. i. p. 97; *C. A. Meyer, Verz. Pfl. Cauc.* p. 165.

This has been for many years one of the most conspicuous spring ornaments of the Royal Gardens, where it forms a dwarf tree, standing to the west of the Cactus House, near the fine specimen of *Pinus Coulteri*, and so covered with white flowers in March or April (according to the season) as to appear as if snowed over. The flowers appear with the half-developed leaves, but have never been succeeded by fruit. Whether this should be considered as anything more than the wild form of the Myrobalan Plum, *P. cerasifera*, Ehr. (see tab. 5934), has been doubted by the excellent observer C. Koch, as I have stated under the latter plant; and, indeed, the characters whereby most of the native plums are separated, are not of very much moment. With regard to *P. divaricata*, however, its leaves, when full grown, broadening at the base, and appearing with its smaller flowers, and its fruit not being intruded at the base, together with its remarkable habit, would appear to constitute sufficiently marked diagnostic characters. The petals which are almost orbicular in the Kew specimens are more obovate in native ones from the Caucasus, collected

by Hohenacker, and in others from the Copenhagen Gardens.

Prunus divaricata was introduced into England in 1822, according to Loudon, probably from the Dorpat Gardens, when under the direction of its describer Ledebour, and is a small tree ten to twelve feet high and broad, forming a hemispherical mass on the ground with a singularly graceful ramification; according to Boissier, it has a very wide geographical range, from Macedonia to the Caucasus and Northern Persia. The specimen at Kew was procured by the late Curator, Mr. J. Smith, from Messrs. Osborne, of Fulham, about thirty-eight years ago.

Descr. A small tree, ten to twelve feet high, branching from the very base, the branches numerous, slender, widespreading, the lower lying almost flat on the ground; the whole forming a hemispherical or rounded mass; branchlets slender, glabrous. *Leaves* appearing with the flowers, when young lanceolate, acuminate, serrate, pubescent in the midrib and nerves beneath, when fully formed two by one and a half inch long and broad, more ovate and often subcordate at the base, finely serrate, and glabrous beneath; petiole slender, glabrous. *Flowers* three-quarters of an inch in diameter, solitary from the flowering buds, peduncle short, glabrous. *Calyx* with ovate-lanceolate recurved lobes. *Petals* rounded, concave. *Stamens* white with yellow anthers. *Ovaries* one or two. *Fruit* one inch long, ellipsoid or globose, base not intruded, yellow; stone (from native specimens) half an inch long, broadly ellipsoid, compressed but turgid, obtuse at both ends, subacute along one margin, and with a sharp-edged groove along the other; faces quite smooth.—*J. D. H.*

Fig. 1, Flower cut vertically; 2, ditto with petals removed, showing two ovaries; 3, stamens; 4, stigma:—*all enlarged.*

I.Reeve & Co.London

Tab. 6520.

ALOE Greenii.

Native probably of the Cape.

Nat. Ord. Liliaceæ.—Tribe Aloineæ.

Genus Aloe, *Linn.*; (*Kunth Enum.* vol. iv. p. 492.)

Aloe *Greenii;* breviter caulescens, caule simplici, foliis 10–12 dense rosulatis lanceolatis sesquipedalibus viridibus obscure verticaliter lineatis et maculis copiosis oblongis albidis confluentibus irregulariter transversaliter seriatis decoratis, pedunculo subpedali, paniculæ ramis strictis 5–7, racemis oblongis vel demum cylindricis, pedicellis flore subtriplo brevioribus, bracteis lanceolatis acuminatis pedicello subæquilongis, perianthii pallide rubri 15 lin. longi tubo medio insigniter constricto, segmentis oblongis tubo 2–3-plo brevioribus, genitalibus demum perianthio subæquilongis.

A. Greenii, *Baker in Journ. Linn. Soc. ined.*

This is a well-marked new species of *Aloe* of the group *Pictæ*, which we have for some time cultivated at Kew. All that I can make out for certain about its history is that it was received under the name which I have adopted from Mr. Wilson Saunders, and that this name was given to it by Mr. T. Cooper, but that it is not one of the plants which the latter collected in his travels in Cape Colony, which yielded so many interesting discoveries in this set of plants. In the *Pictæ* group of Aloes the present plant may be readily distinguished by its elongated racemes and by the strong construction of the perianth-tube at the middle. Our plate was drawn from a specimen that flowered in the Succulent House at Kew in October, 1879.

Descr. Well-grown plants furnished with a short simple *stem* below the rosette of leaves. *Leaves* twelve or fifteen in a dense rosette, lanceolate, fifteen to eighteen inches long, three inches broad in the lower part, narrowed gradually from two-thirds of the way down to a long point, flat in the lower half on the face to a late stage, a quarter or a third of an inch thick in the centre, bright green, with

obscure vertical whitish lines and broad irregular transverse bands of confluent oblong whitish spots, the crowded deltoid-cuspidate ascending marginal prickles an eighth or a sixth of an inch long, connected by a very narrow horny line. *Peduncle* stiffly erect, about a foot long. *Panicle* about as long as the peduncle, with five or seven branches; racemes oblong or finally oblong-cylindrical, four to nine inches long, three inches in diameter when fully expanded; lower pedicels about half an inch long; bracts lanceolate acuminate, as long as the pedicels. *Perianth* pale red, an inch and a quarter long; tube globose at the base and very much constricted at the middle; segments oblong, a third or half as long as the tube. Longer *stamens* and style finally as long as the perianth. *Style* twice as long as the oblong ovary.—***J. G. Baker.***

A. Whole plant, *much reduced*. Fig. 1, a flower, cut open; 2, stamens, showing back and face; 3, pistil; 4, horizontal section of ovary:—*all magnified*.

9

6

5

4.

1

7

8

3

2

M S del, J N Fitch Lith

Vincent Brooks Day & Son Imp

L Reeve & Co London

Tab. 6521.

STELIS Brückmülleri.

Native of the Andes.

Nat. Ord. Orchideæ.—Tribe Pleurothalleæ.

Genus Stelis, *Swartz ;* (*Lindl. Gen. et Sp. Orchid.* p. 11.)

Stelis *Brückmülleri ;* cæspitosa, glaberrima, folio elliptico-lanceolato in petiolum angustato apice 2-fido convexo medio profunde canaliculato, racemo solitario filiforme folio duplo longiore erecto multifloro, floribus numerosis dissitis undique spectantibus, bracteis infundibularibus ore valde obliquo infimis parvis vacuis, perianthio $\frac{1}{6}$-poll. diam., sepalis æqualibus late ovatis subacutis basi connatis pallide purpureis intus longe sparse pilosis, petalis dolabriformibus, labio parvo peltatim stipitato stipite geniculato, lamina ovato-oblonga obtusa basi truncata medio longitudinaliter alata, columna apice utrinque late auriculata **auriculis patentibus obovato-rotundatis.**

S. Brückmülleri, *Reichb. f. in Hort. Veitch.*

This singular little orchid resembles the green-flowered *Stelis oppioglossoides* of Swartz, a West Indian plant, figured in the Botanical Register (tab. 935), but has smaller leaves and flowers, and the latter are of a purple colour and hairy inside; the bracts too are different, those of the species here figured resembling funnel-shaped cups with very oblique mouths. Like all the other species of the genus, it is of botanical interest rather than horticultural.

The specimen here figured flowered in the Royal Gardens in December of last year from plants presented by Messrs. Veitch, of the Royal Exotic Nurseries, Chelsea, and was named as above by Professor Reichenbach, but I do not find it described anywhere. It is probably a native of the Mexican Andes.

Descr. Tufted. *Leaves* one and a half to two inches long, exclusive of the petiole, which is as long, one-half to two-thirds of an inch broad, elliptic-lanceolate, rather narrower at the base than at the bifid tip, convex above

with a deep median groove, very coriaceous, bright green; petiole enclosed for half its length in a membranous brown ribbed sheath with a truncate mouth. *Racemes* very shortly peduncled, solitary from each leaf-sheath, two or three times as long as the leaf, erect, very slender, clothed at intervals with bracts from near the base to the summit; bracts one-tenth of an inch long, between cup- and funnel-shaped, with a very oblique mouth, lowest smaller and narrower without flowers, uppermost with an acute lip. *Flowers* at intervals of one-sixth of an inch along the rachis, about one-sixth of an inch in diameter, inserted all round the rachis. *Perianth* subcampanulate, trigonous in bud, yellowish purple without, pale purple within. *Sepals* broadly ovate, acute, united at the base, three-nerved; clothed with long flexuous spreading hairs within. *Petals* very minute, axe-shaped with an incurved edge. *Lip* minute, peltately attached to a curved stipes, undivided, cordate-oblong, obtuse, with a longitudinally rather thickened disk. *Column* with a large spreading auricle on each side at the top.—*J. D. H.*

Fig. 1, Side view of flower; 2, front view of the same with the sepals removed, showing the two petals, lip, and spreading auricles of the column; 3, sepal; 4, petal; 5, lip; 6, side view of column and lip; 7, external, and, 8, internal view of anther-case; 9, pollen:—*all greatly enlarged.*

A B del. J.N Fitch Lith

Vincent Brooks Day & Son Imp

Tab. 6522.

LATHYRUS ROTUNDIFOLIUS.

Native of South Russia and Asia Minor.

Nat. Ord. Leguminoseæ.—Tribe Vicieæ.

Genus Lathyrus, *Linn.*; (*Benth. et Hook. f. Gen. Pl.* vol. i. p. 526.)

Lathyrus *rotundifolius*; glaberrimus, caule elato late alato ramoso, foliis 1-jugis, foliolis elliptico- v. obovato-rotundatis 3–5-nerviis obtusis subacutisve apiculatis, stipulis semisagittatis oblongis lanceolatisve acutis petiolum vix æquantibus, pedunculis folio sublongioribus, racemis 6–7-floris, calycis lobis triangularibus acutis tubo brevioribus, corolla rosea, legumine longe lineari subincurvo paulo compresso basi subattenuato dorso carinato, seminibus oblongis reticulatis.

L. rotundifolius, *Willd. Sp. Pl.* vol. iii. p. 1088; *Bieberst. Fl. Taur. Cauc.* vol. ii. p. 156*; *Cent. Plant. Rar. Ross.* vol. i. t. 22; *DC. Prodr.* vol. ii. p. 370; *Boiss. Fl. Orient.* vol. ii. p. 612.

L. miniatus, *Stev. Verz. Taur.* p. 140.

L. peduncularis, *Poir. Encycl. Suppl.* vol. ii. p. 775.

This very beautiful plant has been long cultivated in England, though when and how introduced is not certain. It is not described in Aiton's Hortus Kewensis, nor, up to this time, cultivated at Kew; it is not included in Mamaout and Decaisne's "Flore Elementaire des Jardins et des Champs," which is the fullest work of the kind known to me, nor do I find it in the more accessible works devoted to English out-of-door gardening; yet I observed it last summer growing in the gardener's cottage at Lytchett, and it probably occurs elsewhere, though overlooked as too like an Everlasting Pea to be worth notice. Nevertheless it is one of the most charming plants of its kind, perfectly hardy, a free flowerer, and for the brilliancy and delicacy of its rose-coloured flowers, it ought to be a favourite. Like its near ally, the Everlasting Pea, it is scentless.

A variety of this plant, *L. rotundifolius*, var. *elliptieus*, which is figured in the Botanical Register, tab. 333, is a very inferior plant, with much smaller and darker-coloured, more

October 1st, 1880.

purple flowers; it appears to have been cultivated in the Birmingham Botanic Gardens in 1836.

L. rotundifolius has a wide range; we have examined specimens in the Herbarium from Roumelia, the Crimea, Asia Minor, and the Caucasus, and according to Boissier it extends eastwards to Northern Persia. I am indebted to Mr. Corderoy, of Blewbury, near Didcot, a valued correspondent and cultivator of succulent plants, for the specimen here figured, which flowered in his garden in June of the present year.

Descr. A perfectly glabrous climbing Everlasting Pea; branches broadly winged. *Leaves* with a short petiole, one pair of leaflets, and a filiform branched tendril; leaflets two to two and a half inches long, orbicular or broadly-elliptical or subovate, obtuse with a short apiculus, pale green, three- to five-nerved; petiole shorter than the leaflets, winged; stipules large, hastate with acute tips and basal lobes. *Racemes* on a slender peduncle equalling the leaves, many-flowered; bracts minute. *Flowers* three-quarters to one inch in diameter, bright rose-pink. *Calyx* with triangular acute lobes. *Standard* orbicular, rather contracted towards the claw, bifid; wings small, obtuse. *Pod* elongate, linear, turgid, somewhat compressed, keeled at the back. *Seeds* oblong, reticulated.—*J. D. H.*

Fig. 1, Section of calyx, staminal tube and ovary; 2, standard; 3, wings; 4, keel 5, stamens; 6, ovary; 7, stigma:—*all but fig. 5 of the natural size.*

M S. del J N. Fitch Lith

Vincent Brooks Day & Son Imp

L. Reeve & C° London

Tab. 6523.

DRACONTIUM Carderi.

Native of the United States of Columbia.

Nat. Ord. Aroideæ—Tribe Lasioideæ.

Genus Dracontium, *Linn.*; (*Engler in A. DC. Monog. Phanerog.* vol. ii. p. 282.)

Dracontium *Carderi*; petiolo gracili lævi glaberrimo marmorato, lamina viridi 3-partita segmento medio 2-fido lateralibus indivisis v. 2-fidis, omnibus pallide viridibus infra medium pinnati-partitis supra medium pinnatifidis, pinnis lobisque membranaceis multinerviis circumscriptione valde irregularibus aliis elliptico-ovatis oblongisve acutis æqui- v. inæquilateris, aliis majoribus irregulariter lobulatis v. rarius pertusis, pedunculo gracili stricto folio duplo longiore lævi glaberrimo, spatha pedali lanceolata acuminata extus luride viridi costis fusco-rubris, intus rubro-purpurea, spadice 1½-pollicari breviter crasse stipitato cylindraceo obtuso violaceo, perianthii foliolis 5 spathulatis apice inerassatis fornicatis cucullatis, staminibus ad 8, ovario 3-loculari loculis 1-ovulatis in stigma æquilongum robustum attenuato, stigmate punctiforme, ovulis basilaribus erectis.

The genus *Dracontium*, as restricted by Engler in his recent monograph of the *Aroideæ*, includes the wonderful *Godwinia Gigas* (tab. nostr. 6048), of Nicaragua, and consists of this and two other species, natives of N. Brazil and Guiana; to these must be added the subject of the present plate, which extends the geographical range of the genus to the United States of Columbia, and which differs from its congeners in the smooth petiole and very long peduncle. A supposed fifth species has been fully and carefully described and figured by Dr. Masters in the *Gardeners' Chronicle* for 1870 (p. 344, tab. 58) as *D. elatum*, which differs from Engler's generic character in the ovules being attached to the middle of the septum of the ovary, a character by which Schott separated *Ophiome* from *Dracontium*, very unnaturally as it appears to me. This *D. elatum* is taken up in the index of Engler's monograph, where the name is printed in italic type, indicating its being a synonym; but the reference to a page is omitted, and I have failed to to trace it anywhere in the body of the work. Mr. Baker,

in a note in Saunders' Refugium (vol. iv. tab. 282), suggests that it is only *D. asperum*, and that the locality of Sierra Leone is an error.

I am indebted to Mr. Bull, F.L.S., for the means of figuring this interesting plant, and take the present opportunity of recording my sense of the signal service which this ardent horticulturist has rendered to botanical science, by the introduction and cultivation of so many fine plants of this family; plants which cannot be satisfactorily investigated except in a living state, and which, from their brief duration, lurid colours, and often fœtid odour, offer no attraction to the lovers of other than rare and curious plants. *D. Carderi* was discovered by the traveller whose name it bears, and was imported by Mr. Bull, who flowered it at his establishment in Chelsea in April, 1879.

Descr. *Petiole* two to three feet high, slender, terete, mottled with bands of dirty green; lamina two feet in diameter, three-sect to the base; divisions horizontal and drooping at the ends, undivided or forked at or below the middle, pinnatisect below the middle, pinnatifid beyond it; pinnules or lobes very unequal, the lower contracted or not at the base, oblong or obovate, acute or acuminate, some two to three inches long and undivided, others six to eight inches and lobed or split, or perforated, all pale green, membranous, with many arching nerves. *Peduncle* twice as long as the petiole, as slender and similarly coloured. *Spathe* a foot long, lanceolate, acuminate, dirty green outside with reddish brown raised nerves, dark purple inside. *Spadix* one and a half inch long, on a very short stout stipes, cylindric, obtuse, violet blue; flowers (unexpanded) about one-sixteenth of an inch in diameter; perianth-segments five, spathulate, with incurved cucullate tips; stamens about eight; ovary three-celled, contracted into a stout columnar style with a very small three-lobed terminal stigma.—*J. D. H.*

Fig. 1, Whole plant, *greatly reduced*; 2, spadix, *of the natural size*; 3, unexpanded flower; 4 and 5, perianth-segments; 6, anthers (immature); 7, section of ovary; 8, ovule:—*all enlarged.*

L.Reeve & Co London

TAB. 6524.

HIBISCUS SCHIZOPETALUS.

Native of Eastern Tropical Africa.

Nat. Ord. MALVACEÆ.—Tribe HIBISCEÆ.

Genus HIBISCUS, *Linn.*; (*Benth. et Hook. f. Gen. Pl.* vol. i. p. 207.)

HIBISCUS *schizopetalus*; glaber, fruticosus, foliis petiolatis ovatis ellipticisve acutis grosse serratis basin versus integerrimis 3-nerviis, floribus solitariis longe pedunculatis pendulis pedunculo medio articulato, involucello 0 v. minimo, calyce cylindraceo spathaceo apice obtuse 3-lobo demum fisso, petalis amplis longe unguiculatis flabellatim multifidis lobis linearibus obtusis, tubo stamineo longissimo pendulo, antheris sparsis longe stipitatis, styli ramis 5 filiformibus ascendentibus, stigmatibus globosis, capsula basi calyce spathaceo inclusa oblongo-cylindracea obtusa obscure 5-loba torulosa, seminibus brunneis glabris.

H. Rosa Sinensis *var.* schizopetalus, *Masters in Gard. Chron.* 1879, p. 282; *Boulger, l. c.* p. 372.

HIBISCUS sp. *Kirk and Oliver in Journ Linn. Soc.* vol. xv. p. 478.

This singular and beautiful plant has attracted much attention, on account both of its horticultural and botanical interest; differing as it does from all other species in the remarkable character of its petals, and yet presenting so many points of resemblance to a world-wide garden favourite whose native country is unknown (the *H. Rosa Sinensis*), as to have suggested its specific identity with that plant. The differences, however, between this and *H. Rosa Sinensis* are a great deal too many and too important to render the idea of this being a sport or variety of that plant tenable. They are, firstly, the petals, which, however, might have originated as a sport; then the pendulous flower, the suppression of the epicalyx, the longer tubular calyx with obtuse lobes; above all, the long fruit with small smooth seeds. I have examined specimens of *H. Rosa Sinensis* from thirty different localities, and found none approaching *R. schizopetalus* in any of the above characters. Too much importance should not be attributed to the supposition that the native country of

H. Rosa Sinensis is not well known; Loureireiro states that it is indigenous in both China and Cochinchina, and it has certainly been for long cultivated in China, and it occurs in so many of the Pacific Islands as to render it very probable that it is a native of the Pacific; on the other hand, its two nearest allies, the present plant and *H. liliiflorus*, being natives, the one of East Africa, and the other of the Mascarene Islands, suggests the probability of Africa being the parent country of *H. Rosa Sinensis*.

For the discovery of this fine plant we are indebted to our indefatigable correspondent, Dr. Kirk, H.B.M. Consul at Zanzibar, who found it first in 1874 on the coast hills at Mombasa, in lat. 4° S.; in 1877 at Kilwa, in 7° 40′ S.; and, lastly, at Lindi, in 10° S. It grows both in dry rocky slopes and in damp mountain glens, in dense shade, amongst Bignonias, Balsams, and Ferns.

The specimen here figured was raised from seed sent by Dr. Kirk, which has been flowering in the Stove-house from the month of June till now, late in October.—*J. D. H.*

Fig. 1, Section of base of flower through the ovary; 2 and 3, anthers and portion of filaments; 4, ovary and rudiments of epicalyx; 5, top of staminal column and stigmas; 6, transverse section of ovary:—*all enlarged.*

L. Reeve & Co. London.

Tab. 6525.

CRINUM PURPURASCENS.

Native of West Tropical Africa.

Nat. Ord. Amaryllidaceæ.—Tribe Amaryllideæ.

Genus Crinum, *Linn.*; (*Kunth Enum.* vol. v. p. 547.)

Crinum *purpurascens*; bulbo parvo ovoideo brevicollo copiose stolonifero, foliis multis loratis patulis angustis undulatis 1½–2-pedalibus, scapo gracili foliis duplo breviori, umbellis sessilibus 6–10-floris, spathæ valvis deltoideis, floribus erectis albis extus purpurascentibus, tubo gracili 5–6-pollicari, segmentis oblanceolatis acutis recurvatis tubo duplo brevioribus, filamentis arcuatis saturate rubellis limbo distincte brevioribus, stylo filamentos superante stigmate minuto capitato.

C. purpurascens, *Herb. Amaryll.* p. 250; *Roem. Amaryll.* p. 72; *Kunth Enum.* vol. v. p. 554.

This is a very distinct Crinum of the star-flowered set from West Tropical Africa, remarkable for its dwarf slender habit and very numerous spreading narrow undulated leaves. Its alliance is with the Himalayan *C. amœnum* and *pratense*, and the New World *C. americanum* and *erubescens*. It was introduced in the time of Dean Herbert, and is carefully described in his classical work on the Amaryllidaceæ, but has never been previously figured. Our drawing was made from a plant that flowered at Kew in June, 1879, the bulb of which was sent by the Rev. H. Goldie, and we have since had it from Messrs. Veitch, from bulbs brought home by Mr. Kalbreyer. It grows at a low level by the side of streams about Fernando Po and in Old Calabar, and, of course, requires stove-heat for its successful cultivation.

Descr. *Bulb* ovoid, about two inches in diameter, with a short neck, and copious stolons. *Leaves* twenty or thirty, cotemporary with the flowers, spreading, lorate, one and a half or two feet long at the flowering-time, an inch broad,

thin in texture, dark green, much undulated towards the edges. *Scape* slender, subterete, tinted with purple, under a foot long, produced from the axis of one of the outer leaves of the rosette. *Umbel* sessile, six- to ten-flowered; spathe-valves small, deltoid. *Flowers* rotate, faintly scented, white, tinted on the outside with purple, erect in bud. *Perianth* tube slender, five or six inches long; limb about half as long as the tube, the oblanceolate acute recurving segments a third or half an inch broad three-quarters of the way up. *Stamens* arcuate, distinctly shorter than the perianth-limb; filaments bright red; anthers linear, half an inch long. *Style* overtopping the stamens, bright red; stigma minute, capitate.—*J. G. Baker*.

A.N. del. et lith.

Vincent Brooks Day & Son lith.

L Reeve & Co. London

Tab. 6526.

SCABIOSA PTEROCEPHALA.

Native of Greece.

Nat. Ord. Dipsaceæ.

Genus Scabiosa, *Linn.*; (*Benth. et Hook. f. Gen. Pl.* vol. ii. p. 159.)

Scabiosa *pterocephala*; dense late cæspitosa, sericeo-tomentosa, basi suffruticosa, ramis procumbentibus novellis foliosis, foliis confertis ovato-oblongis in petiolum angustatis v. lyrato-pinnatifidis grosse crenato-serratis, lobis lateralibus brevibus dentatis crenatisve, pedunculis breviusculis, capitulis depressis, involucri bracteis pluriseriatis lanceolatis floribus brevioribus v. æquantibus, floribus radiantibus carneo-purpureis, involucello cylindraceo hirsuto obsolete coronulato, corona in aristas breves v. elongatas abeunte, calycis aristis 15–16 involucro multoties longioribus.

S. pterocephala, *Linn. Sp. Pl.* 146; *Sibth. Fl. Græc.* t. 113.

Pterocephalus Parnassi, *Spreng. Syst. Veg.* vol. i. p. 384; *Boiss. Fl. Orient.* vol. iii. p. 148.

P. perennis, *Vaill. in Act. Paris*, 1722, p. 384.

P. bellidifolia, *Boiss. Diagn.* ser. 1, vol. ii. p. 109 (forma depauperata).

A densely-tufted perennial, forming large low cushions, perfectly hardy, and, when in flower, very ornamental. It has been long cultivated in Kew, in the open border of the herbaceous ground, but I am not aware how or whence it was procured. It is a native of the mountains of Greece, growing in dry rocky places at elevations of 3000 to 6000 feet, and extends from the Ionian Islands (Mount Nero in Cephalonia) to Mount Athos in Macedonia, and Parnassus in Attica. At Kew it flowers in July and August.

Descr. *Stems* and *branches* woody, tortuous, procumbent, sending up very numerous short leafing shoots, the whole forming dense patches two to three feet in diameter; whole plants densely hoary-pubescent. *Leaves* one to one and a half inches long, narrowed into a stout petiole, blade simple ovate obtuse and deeply crenate-toothed or lyrate-pinnatifid

with the terminal lobe ovate obovate or rounded and crenate-toothed, the lateral lobes few short obtuse and lobulate. *Peduncle* terminal, stout, solitary, erect, naked, tomentose, shorter or longer than the leaves, rarely exceeding three inches long. *Heads* depressed-hemispherical, one and a half inches in diameter; involucral-bracts rarely as long as the flowers, lanceolate or elliptic-ovate, subacute. *Flowers* very many, one-third of an inch long, those of the ray horizontal, limb oblique two-lipped, those of the disk erect, regular, with a slender tube and campanulate five-fid limb; involucel cylindric, truncate, with plumose long or short awns. *Calycine awns* 15–16, much longer than the involucel, plumose. *Corolla* of the ray nearly half an inch long, tube pubescent, upper lip two-lobed, lobes short rounded lobulate; lower lip three-lobed, lobes ovate obtuse; corolla of the disk-flowers shorter, tube equalling the campanulate four-lobed limb. *Stamens* with filaments twice as long as the corolla-lobes.—*J. D. H.*

Fig. 1, Flower of disk; 2, flower of ray; 3, awn of calyx; 4, anther; 5, stigma: —*all enlarged.*

Reeve & Co London

Tab. 6527.

CALOCHORTUS PULCHELLUS.

Native of California.

Nat. Ord. Liliaceæ.—Tribe Tulipeæ.

Genus Calochortus, *Pursh*; (*Baker in Journ. Linn. Soc.* vol. xiv. p. 302.)

Calochortus (Macrodenus) *pulchellus*; bulbo ovoideo, foliis basalibus 1–2 linearibus vel lanceolatis firmis glabris, caule subpedali superne ramoso, floribus 6–12 pendulis laxe corymbosis, perianthii globosi lutei segmentis exterioribus oblongis acutis glabris, interioribus orbiculatis facie et margine pilosis conspicue foveolatis, staminibus perianthio duplo brevioribus antheris oblongis, capsulis oblongis profunde trilobatis angulis dorso alatis.

C. pulchellus, *Dougl. MSS.*; *Wood in Proc. Acad. Phil.* 1868, p. 168; *Baker in Journ. Linn. Soc.* vol. xiv. p. 303; *S. Wats. in Proc. Amer. Acad.* vol. xiv. p. 262.

Cyclobothra pulchella, *Benth. in Trans. Hort. Soc. n. s.* vol. i. p. 415, tab. 14, fig. 1; *Lindl. in Bot. Reg.* t. 1662; *Kunth Enum.* vol. iv. p. 228; *Regel Gartenflora*, tab. 802.

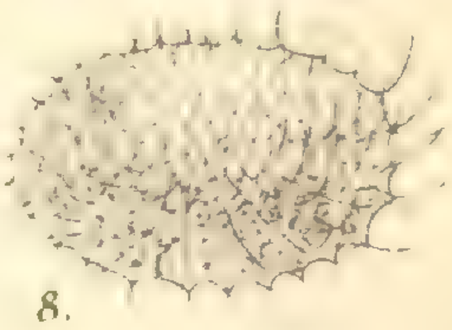
The Calochorti, of which between twenty and thirty species are now known, belong exclusively to California, British Columbia, the Rocky Mountains, and Mexico, and one and all seem to require greater heat than an English summer gives them to mature their bulbs properly. The present species and *C. albus* are well marked from all the others by their more robust habit and numerous large drooping globose flowers, which never expand fully and are much less fugitive than in the more brilliantly-coloured *C. venustus* and its neighbours. *Calochortus* and *Cyclobothra* slide into one another so gradually that it is not worth keeping them up as distinct genera.

The present plant was one of those introduced by Douglas about 1830, when travelling for the Royal Horticultural Society, and was originally described and figured by Mr. Bentham half a century ago. Our drawing was made from a specimen that flowered at Kew in the summer of 1879.

November 1st, 1880.

Descr. *Bulb* long, narrow, ovoid, with loose vertically striated firm brown outer tunics. Basal *leaves* one or two, linear or lanceolate, about a foot long, under an inch broad, firm in texture, glabrous, narrowed from the middle to the base and an acute point. *Stem* erect, a foot or more long, branched in the upper half, each fork subtended by one or more reduced leaves. *Flowers* six to twelve to a stem, bright yellow, drooping, on peduncles two or three times as long as themselves. *Perianth* globose, about an inch in length and diameter; outer segments rather more membranous in texture than the inner, tinted with green in the bud, oblong, acute, glabrous; three inner segments orbicular, more or less pilose on the face, minutely ciliated round the margin, furnished above the naked claw with a large saccate foveole, with a ridge of bristly hairs incurved over it from above. *Stamens* half as long as the perianth-segments; anthers oblong, pale yellow, obtuse or minutely apiculate, rather shorter than their flattened filaments. *Ovary* oblong, triquetrous; stigmas three, falcate, linear, sessile, deeply channelled down the face. *Capsule* oblong, an inch long, deeply three-lobed, its cells prominently winged on the back.—*J. G. Baker.*

Fig. 1, Inner segment of perianth, *natural size;* 2, margin of inner segment of perianth; 3, a stamen; 4, the pistil; 5, horizontal section of ovary:—*all more or less magnified.*



A B del. J N Fitch Lith.

Vincent Brooks Day & Son Imp

Tab. 6528.

ARCTOTIS aspera, *var.* arborescens.

Native of South Africa.

Nat. Ord. Compositæ.—Tribe Arctotideæ.

Genus Arctotis, *Linn.*; (*Benth. et Hook. f. Gen. Pl.* vol. ii. p. 458.)

Arctotis (Euarctotis) *aspera*; suffruticosa, ramosa, hispido-pilosa, ramis validis sulcatis ascendentibus, foliis oblongis lineari-oblongisve pinnatifidis inferioribus petiolatis superioribus sessilibus auriculato-semi-amplexicaulibus, costa crassa, segmentis lato-ovatis oblongisve basi lata decurrentibus grosse irregulariter acute dentatis undulatisque supra hispidis glabratisve subtus plus minusve cano-tomentosis, capitulis magnis, involucri late hemispherici squamis exterioribus ovatis herbaceis hispidis, intimis panduratis truncatis coriaceis, ligulis pollicaribus obtusis, achæniis basi sericeis, pappi squamis interioribus oblongis cuneatisve apice rotundatis v. 2–3-fidis.

A. aspera, *Linn Sp. Pl.* 1307; *DC. Prodr.* vol. vi. p. 488; *Harv. et Sond. Fl. Cap.* vol. iii. p. 453.

Var. arborescens, *DC. l. c.* 488; ramis foliisque subtus tomentosis, pedunculis nigro-pilosis, ligulis extus roseis intus niveis basi aurantiacis.—A. arborescens *Jacq. Hort. Schœnb.* vol. ii. tab. 171.

The genus *Arctotis* is little known to horticulturists, although one species, the present, of the thirty described, has long been known in botanic gardens, and no less than thirteen are figured in Jacquin's "Hortus Schœnbrunensis," from specimens that flowered in the Imperial Botanic Garden of Vienna during the last century. Sixteen (exclusive of one referred to *Venidium*) are enumerated in the "Hortus Kewensis" as being in cultivation in 1813, and there are five others enumerated as species in that work which are now regarded as varieties. The present is one of the most beautiful of the genus; it was cultivated in England before 1710, and in Holland much earlier, for it is described in Johan Commelyn's "Hortus Medicus Amstelodamensis," published in 1697, as "Anemolospermos Africana, foliis Cardui Benedicti, florum radiis intus sulphureis."

According to De Candolle *A. aspera* is a very variable

plant, of which he enumerates five varieties, the last being the subject of the present plate, distinguished by the white under-surface of the leaf, and colours of the ligules. This variety is omitted in Harvey and Sonder's "Flora Capensis," as is all notice of Jacquin's beautiful figure, although the *arborescens* of Willdenow, another variety (var. *scabra* of Berg, *A. maculata*, Jacq. l. c. t. 379) which must not be confounded with it, is there taken up.

I am indebted to Mr. Lynch, Curator of the Cambridge University Botanical Gardens, for the specimen of this beautiful and interesting plant, which he informs me was formerly grown at Cambridge under the name of *A. alba* (an unpublished one). Mr. Lynch adds that it has made a most attractive bed during the past summer, its flowers having been very profuse and charming in colour.

Descr. An undershrub, one to three feet high, with stout grooved hispid ascending branches. *Leaves* five to eight inches long, pinnatifid; radical petioled; cauline sessile with broad auricled semi-amplexicaul bases, a very stout grooved midrib and nerves beneath; segments ovate or ovate-oblong, acute, decurrent, lobulate and coarsely toothed with waved edges, dark green above and hispid or glabrate, tomentose or cottony beneath. *Heads* two and a half inches in diameter, on stout peduncles clothed with blackish hairs. *Involucre* broadly campanulate; outer bracts ovate, subacute, herbaceous; inner much longer, panduriform, truncate, very coriaceous. *Ligules* about twenty, quite horizontal, obtuse, one to one and a half inches long, bright red outside, white within, but orange towards the base. *Disk-flowers* brownish. *Achenes* silky at the base; inner scales of pappus cuneate-oblong, obtusely lobed or entire at the tip.—*J. D. H.*

Fig. 1, Ray-floret; 2, disk-floret; 3, ditto, laid open; 4, ditto, unopened; 5, inner pappus-scales; 6, stigma of ray-florets; 7, stigma of disk-florets; 8, receptacle; 9, inner bract of ditto; 10, flower-bud:—*all but figs. 8 to 10 enlarged.*

A B del J.N. Fitch. Lith

Vincent Brooks Day & Son Imp

L. Reeve & Co. London.

Tab. 6529.

DISA megaceras.

Native of South Africa.

Nat. Ord. Orchideæ.--Tribe Ophrydeæ.

Genus Disa, *Berg;* (*Endl. Gen. Pl.* p. 211.)

Disa (Repandra) *megaceras;* elata, robusta, caule folioso, foliis lanceolatis acuminatis, spica multiflora, bracteis lanceolatis longe acuminatis floris brevioribus v. longioribus, floribus magnis albis purpureo maculatis, galea postica conica in cornu pollicari recto v. lente curvo tenui producta, sepalis decurvis oblongo-lanceolatis apiculatis, petalis late oblique ovatis recurvis acutis, labello anguste lingulato glabro apice acuto recurvo v. revoluto, anthera supina loculis elongatis fere rectis.

D. macrantha, *Hort.*

It is not without great consideration that I have been compelled to give a new name to the little-known *Disa macrantha* of the gardens, nor would I have done so were I not well assured that the true *D. macrantha* is a very different plant, coming indeed from a very different part of the South African continent from that inhabited by the present species. It is true that of *D. macrantha* very little is certainly known; it is a species of Thunberg's, described in his "Flora Capensis" (p. 33) as having the spur conical, shorter than the hood, the petals small, hidden under the hood, rounded at the base, falcately recurved in the middle, angled posteriorly, dilated retuse and crenulate at the end, the lip oblong acute keeled suberect, and the anther &c. as in *D. cornuta*, than which the flowers are rather larger.—Now if the figure of the plant here given is compared with this description, and with the plate of *D. cornuta* in this work (t. 4091), it will be seen that in all those points in which *D. macrantha* differs from *D. megaceras*, it agrees with *D. cornuta*, notably in the short spur, in the small petals falcately recurved, dilated at the apex, and hidden under the hood; in the oblong lip and very small broad anther: to which must be added that *D. macrantha* is a western plant of the Cape district itself, whereas *D. megaceras* is an eastern one, of which there are in the Kew Herbaria

specimens from Kalberg on the Eastern frontier (from Mr. Henry Hutton), from Natal (Mrs. Fannier), Somerset, Kaffraria (Mr. Cooper), and from the top of Bosch berg, alt. 4500 feet (Mr. MacOwan.)

As to *Disa macrantha* of Thunberg, it is clearly a species very near to *D. cornuta*, if not a variety of that plant; there are numerous specimens thus named in the Kew Herbaria, amongst them one from the sands about Salt river, near Capetown, collected by Dr. Harvey, who has appended to it a ticket with "*D. macrantha* of Thunberg. Differs from *D. cornuta* merely in its labellum. I consider it only a variety, yet its habit is different." Whatever the difference of habit is, it is lost in the drying; for the specimen is in this state undistinguishable from *D. cornuta*, and, like it, has flowers not half the size of those of *D. megaceras*, with minute included petals.

I am indebted to Mr. Elwes for the fine flowering specimen of *M. megaceras* here figured, which flowered with him to August of the present year.

Descr. *Stem* one to two feet high, often as thick as the thumb, robust, leafy. *Leaves* six to eight inches long, lanceolate, long-acuminate, concave. *Spike* dense or lax, six to twelve inches long, few- or many-flowered; bracts leaf-like, usually much exceeding the flowers. *Flowers* very large, one and a half to one and three-quarters of an inch broad from the tip of the hood to that of the lip, and three inches from the tip of the hood to that of the spur, white blotched inside with pale purple. *Upper sepal* (hood) conical, with an oblique mouth, acute above, slightly curved, undulate, ending in a greenish straight slender spur as long as itself; lateral sepals decurved, oblong-lanceolate, with a short recurved spur behind the tip. *Petals* broadly obovate, nearly as wide as the hood is broad, the dilated acute end exserted and recurved. *Lip* two-thirds of an inch long, narrowly tongue-shaped, with a revolute tip, glabrous, smooth. *Anther* reflexed, one-third of an inch long; cells contiguous, parallel, very narrow, tip obtuse. *Stigma* very short, hemispheric. *Ovary* one and a half inches long.—*J. D. H.*

Fig. 1, Top of ovary, lip, stigma, and anther; 2, column seen in front; 3, pollen-mass:—*all enlarged.*

M.S del, J.N.Fitch Lith

Vincent Brooks Day & Son Imp

L. Reeve & Co. London

Tab. 6530.

ERIGERON MULTIRADIATUS.

Native of the Himalaya Mountains.

Nat. Ord. Compositæ.—Tribe Asteroideæ.

Genus Erigeron, *Linn.*; (*Benth. et Hook. f. Gen. Pl.* vol. ii. p. 279.)

Erigeron (Phenactis) *multiradiatus;* pubescens v. hirsutus, caule simplici v. parce ramoso gracili v. robusto sæpius monocephalo, foliis radicalibus nullis v. longe petiolatis elliptico-lanceolatis v. oblanceolatis obtusis acutisve in petiolum decurrentibus integris v. paucidentatis, caulinis brevibus patentibus basi lata amplexicauli sessilibus ovato-lanceolatis acutis v. acuminatis, capitulis magnis 2–2½ poll. diam., involucri late campanulati bracteis lineari-lanceolatis acuminatis pubescentibus et ciliatis, floribus glabris, ligulis numerosissimis 2–3 serialibus involucro duplo longioribus angustis purpureis, acheniis oblongis subsericeis, pappi setis paucis scabridis externis brevissimis.

E. multiradiatus, *Benth. in Gen. Pl.* vol. ii. p. 280 (sub Sect. Phenactis); *Clarke Compos. Ind.* 56.

Aster multiradiatus, *Wall. Cat.* 2969.

A. inuloides, *Don Prodr. Fl. Nip.* p. 178.

Diplopappus Roylei, *DC. Prodr.* vol. v. p. 276?

Stenactis multiradiatus, *Lindl. in DC. Prodr.* vol. v. p. 299.

One of the most beautiful of the alpine Himalayan Compositæ, but very variable and difficult to distinguish from form of neighbouring species, especially of *E. alpinus*, to which small states of it approach very closely. *E. multiradiatus* is, however, in its normal state a much larger and handsomer plant, with the heads usually at least two inches in diameter, and of a fine bright purple colour. In rich moist soil old plants grow two feet high and branch very considerably, and the radical leaves disappear early, giving the plant a very different appearance from that of its younger state, in which the habit is scapigerous, and the radical leaves copious.

E. multiradiatus is a native of grassy wet pastures along the whole length of the Himalayan range, from Kashmir, where it inhabits elevations of 7000 to 9000 feet, to Sikkim, where

it ascends to 12,000 feet. The specimens drawn were raised from Sikkim seed communicated by Dr. King, of the Calcutta Botanical Gardens, and flowered at Kew in June of the present year.

Descr. A pubescent or hirsute herb, in a small state either six to ten inches high, with simple scape-like leafy stems, and numerous radical leaves; or tall, often two feet high, with no radical leaves and a branched leafy stem. *Leaves*, radical when present usually four to eight inches long, oblanceolate, narrowed into a rather long petiole, distantly toothed, three- to five-nerved; cauline ovate-lanceolate from a broad sessile and often subauricled or semi-amplexicaul base, acuminate, erect or recurved. *Heads* solitary on the ends of long peduncles, two to two and a half inches in diameter, very bright purple, disk yellow. *Involucre* broadly hemispherical; bracts slender, pubescent or tomentose, ciliate. *Ligules* three-fourths to one inch long, in two or three series, very slender, tube glabrous. *Disk-flower* glabrous. *Achenes* small, flattened, slightly silky; pappus scanty, hairs scabrid, with an obscure ring of small outer ones.—*J. D. H.*

Fig. 1, Ray-flower; 2, its style-arms; 3, disk-flower; 4, hair of pappus; 5, style-arms of disk-flower; 6, involucre cut open showing the receptacle:—*all but fig.* 1 *enlarged.*

Vincent Brooks Day & Son Imp

Tab. 6531.

WORMIA Burbidgei.

Native of Borneo.

Nat. Ord. Dilleniaceæ.—Tribe Dilleniæ.

Genus Wormia, *Rottb.*; (*Benth. et Hook. f. Gen. Pl.* vol. i. p. 13.)

Wormia *Burbidgei*; frutex, foliis late ellipticis in petiolum compresso-alatum amplexicaulem decurrentibus oblongis obtusis integerrimis v. subsinuatis crasse coriaceis nervosis, costa nervisque utrinque 18–20 patentibus subtus crassis, pedunculis axillaribus et terminalibus cymoso-pauciforis floribus breviter pedicellatis amplis aureis 3-poll. diam., sepalis orbiculatis concavis inæqualibus, petalis obovato-oblongis disco concavis marginibus late subcrispato-undulatis, staminibus albidis interioribus longioribus extimis brevibus setiformibus imperfectis, carpellis ad 7 stylis filiformibus.

The genus *Wormia*, a near ally of the familiar Hibbertias of our greenhouses, consists of about ten species of shrubs or trees with usually very handsome flowers and foliage, which extend from tropical Australia through the Malay Islands and Southern India to the Seychelles. Though known in Indian Botanic Gardens, the present is the only one that to our knowledge has ever flowered in Europe. It is closely allied to *W. subsessilis* of Miquel, figured in the Annals of the Leyden Botanical Museum (vol. i. p. 315, Tab. IX.), but that has larger toothed leaves, flowers five inches in diameter, and very broadly obovate petals without the hollow disk and broad crenate margins of this. Coming from the same country, I was at first disposed to regard these species as identical, but as the dried specimens from Banka, sent from the Leyden Museum to Kew Herbarium, and others gathered in Borneo confirm the accuracy of Miquel's plate, which is, moreover, copied from a drawing taken from life, I am compelled to keep them distinct.

W. Burbidgei is a native of Northern Borneo, where it was discovered by the intelligent and successful collector whose name it bears when exploring the Bornean forests

for Messrs. Veitch. Flowers of it were preserved, and are now in the Kew Herbarium, and the living plant from which the drawing is made is in the collection of its importers, with whom it flowered in July of the present year.

Descr. A glabrous shrub; branches terete. *Leaves* eight to ten inches long, almost exactly elliptic, base contracted and decurrent as a very broad complicate petiole one to one and a half inches long, which expands and is stem-clasping at the base, margins nearly entire or very obscurely waved, upper surface deep green, raised between the eighteen to twenty spreading nerves, which, as well as the midrib, are very prominent beneath. *Flowers* three inches in diameter, subcymose on a simple peduncle two to four inches long, very shortly pedicelled. *Sepals* nearly orbicular, very concave, coriaceous, green. *Petals* pale golden-yellow, obovate-oblong, disk hollowed, margins broadly undulate. *Flowers* very many, almost white; anthers almost filiform, with terminal pores. *Ovary* broadly ovoid, of seven carpels with as many filiform flexuous stigmas.—*J. D. H.*

Fig. 1, Stamen; 2, imperfect outer ditto; 3, apex of anther; 4, ovary; 5, transverse section of ditto:—*all enlarged.*

Vincent Brooks Day & Son Imp

L.Reeve & Co London.

Tab. 6532.

DISA POLYGONOIDES.

Native of Natal.

Nat. Ord. Orchideæ.—Tribe Ophrydeæ.

Genus Disa, *Berg;* (*Endl. Gen. Pl.* p. 211.)

Disa (Macrantha) *polygonoides;* elata, robusta, caule folioso, foliis linear- v. ligulato-lanceolatis longe acuminatis planiusculis 5-nerviis, superioribus abbreviatis vaginæformibus acutis cauli appressis, spica densa ovoidea v. cylindracea, bracteis oblongo-lanceolatis floribus aurantiacis brevioribus v. paulo longioribus, sepalo superiore erecto oblongo concavo dorso basi in calcar breve descendens producto, sepalis lateralibus late ovatis apice rotundatis, petalis parvis erectis lineari-oblongis obtusis apicibus incurvis, labello lineari obtuso, anthera angusta.

D. polygonoides, *Lindl. Gen. et Sp. Orchid.* p. 349.

A very different-looking plant from the *Disa megaceras*, figured in this number of the Magazine, though agreeing in all generic characters most closely, and when more fully developed, as in some of the native specimens preserved in the Herbarium, a very striking plant, the spike of orange flowers sometimes attaining a foot in length. From notes on the Herbarium specimens the colour of the flowers seems to vary a good deal, from bright canary-yellow to light red and even scarlet. It is very near indeed to Swartz's *D. chlorostachya*, differing chiefly, if not wholly, in the shorter less inflated spur.

D. polygonoides inhabits marshy valleys, and has a very wide range, from Grahamstown eastward to Natal; and from the number of collectors who have sent it, it would appear to be a very common orchid. The tubers of the specimen figured were presented to Kew by W. B. Lyle, Esq., of Kirkley Vale Estate, Natal, and flowered in September of the present year in the temperate Orchid House.

Descr. *Tubers* reaching four inches long, subcylindric. *Stem* tall, stout, one to two feet high, leafy, often as thick

as the fore-finger. *Leaves* four to ten inches long by three-quarters to one and a quarter inch broad, linear-lanceolate or almost strap-shaped, gradually narrowed to the acuminate point, nearly flat, with five, rarely seven, strong nerves, dark green, sheaths spotted with red purple; upper leaves much abbreviated, spathaceous, with acute points appressed to the stem. *Spike* three inches to a foot long, cylindric, obtuse, very many flowered; bracts oblong-lanceolate, acuminate, longer or shorter than the orange-yellow or light red or scarlet flowers. *Perianth* three-quarters of an inch long from the tip of the dorsal sepal to that of the lip, densely crowded, suberect. *Dorsal sepal* erect, oblong, subacute, very concave, cymbiform, spurred at the base behind; the spur shorter than the sepal, cylindric or slightly inflated, obtuse, pointing downwards in a line with the axis of the sepal; lateral very broadly ovate, rounded at the tips. *Petals* much smaller than the sepals, erect and partially concealed by the upper sepal, linear-oblong, tip obtuse and incurved. *Lip* strap-shaped, smooth, flat or convex, obtuse or subacute, slightly constricted above the base. *Anthers* suberect, cells narrow, parallel. *Stigma* suborbicular, sessile, depressed in the middle, notched in front. *Ovary* about one-third of an inch long, much twisted.—*J. D. H.*

Fig. 1, Front, and 2, side view of flower; 3, ovary, anther, and lip; 4, anther and stigma; 5, pollen-mass:—*all enlarged.*

1
2

Tab. 6533.

CEREUS Fendleri.

Native of New Mexico.

Nat. Ord. Cacteæ.—Tribe Echinocacteæ.

Genus Cereus, *Haworth;* (*Benth. et Hook. f. Gen. Pl.* vol. i. p. 849.)

Cereus (Echinocereus) *Fendleri;* simplex v. parce e basi ramosus, ovoideus v. subcylindraceus, costis 9–12 tuberculato-interruptis, areolis orbiculatis junioribus tomentosis, aculeis basi bulbosis, radialibus 7–10 rectis curvisve, inferioribus robustioribus, infimo 4-gono albido, sequentibus 2 obscuris ceteris albis v. fusco-variegatis, superioribus tenuioribus pallidis, summo elongato robusto incurvo v. deficiente, aculeo centrali valde bulboso teretiusculo elongato rarissime 0, floribus magnis purpureis subverticalibus, ovarii tubique pulvillis 25–35 aculeolos 3–12 albos sæpe adustos gerentibus, sepalis interioribus 12–15 lineari-lanceolatis v. spathulatis acutis, petalis 10–24 lineari-oblongis v. ovato-spathulatis, stigmatibus 12–16 erectis viridibus stamina numerosissima vix superantibus, bacca ovoideo-globosa pulvillis aculeolatis stipata, seminibus oblique obovatis scrobiculatis, embryone paulo curvo.

C. Fendleri, *Engelm. Cactaceæ of Emory's U. S. and Mexican Boundary Survey,* 34, tab. 52, 53.

This fine Cereus is a native of the great Cactus region of the United States, where, according to its author, Dr. Engelmann, it inhabits rocks in alluvial river-bottoms from Santa Fé to the Cañon of the Rio Grande below El Paso, and from fifty miles east of the Upper Peros westward to Zuni, and the Aztec mountains and the Copper mines. It is admirably described and figured along with twenty-eight other Cacteæ from the same region in the work of Dr. Engelmann quoted above, whose characters I have nearly verbatim reproduced, finding that though drawn up (presumably) for dried specimens, they perfectly accord with those of the cultivated one here figured.

Our specimens were presented to the Royal Gardens along with a very choice set of other Cacteæ from the same regions by Edmund Giles Loder, Esq., of Howe, Floore, a gentleman who possesses a rich collection of rare succulent and other plants. It flowered soon after it was received in June of this year.

December 1st, 1880.

DESCR. *Stem* ovoid or subcylindric, five to seven inches high, and three to four inches in diameter, pale green, simple, rarely branched at the base. *Ribs* nine to twelve, erect or slightly twisted, half an inch deep, obtuse, interruptedly tubercled. *Areoles* at base of the spines orbicular, tomentose when young. *Spines* bulbous at the base, the radial seven to ten, straight or curved, the lower stronger, the lowest four-angled white; the rest whitish or variegated with brown, the upper more slender and pale, the uppermost long curved or wanting; the central one to one and a half inches long, bulbous at the base, brown, terete or wanting. *Flowers* large, purple, suberect, three inches in diameter. *Calyx-tube* short, together with the ovary, one-half to one inch long, both bearing cushions covered with twenty-five to thirty-five short spines with sometimes a few brown ones intermixed. *Inner sepals* twelve to fifteen, linear-lanceolate or spathulate, acute or cuspidate. *Petals* sixteen to twenty-four, linear-oblong or obovate-spathulate, acute or obtuse, close. *Stigmas* twelve to sixteen, large, green, rather larger than the stamens. *Berry* ovoid-globose, purplish, edible, with eighteen to twenty spinous cushions. *Seeds* obliquely obovoid, tubercled; embryo slightly curved. —*J. D. H.*

Fig. 1, Vertical section of base of perianth and ovary, *of the natural size*; 2, ovules, *enlarged*.

INDEX

To Vol. XXXVI. of the THIRD SERIES, or Vol. CVI. of the whole Work.

6511 Agave horrida.
6520 Aloe Greenii.
6528 Arctotis aspera, *var.* arborescens.
6491 Arisæma Griffithii.
6474 Arisæma utile.
6505 Berberis buxifolia.
6501 Bignonia capreolata, *var.* atrosanguinea.
6469 Brownea Ariza.
6507 Bucklandia populnea.
6475 Calochortus Benthami.
6527 Calochortus pulchellus.
6504 Campanula fragilis.
6533 Cereus Fendleri.
6510 Chionographis japonica.
6513 Citrus trifoliata.
6484 Conandron ramondioides.
6512 Crinum Kirkii.
6483 Crinum podophyllum.
6525 Crinum purpurascens.
6485 Cyananthus lobatus.
6490 Cypripedium Spicerianum.
6529 Disa megaceras.
6532 Disa polygonoides.
6523 Dracontium Carderi.
6487 Eichornia azurea.
6530 Erigeron multiradiatus.
6509 Epimedium Perralderianum.
6470 Gentiana Kurroo.
6514 Gentiana ornata.
6497 Gentiana septemfida, *var.* cordifolia.
6515 Helichrysum frigidum.
6524 Hibiscus schizopetalus.
6481 Hypericum ægyptiacum.
6506 Indigofera Anil.
6516 Lacæna spectabilis.
6522 Lathyrus rotundifolius.
6486 Lonicera tomentella.
6499 Lythrum Græfferi.
6477 Maxillaria porphyrostele.
6496 Mormodes Ocanæ.
6473 Narcissus pallidulus — N. Graellsii—N. rupicola.
6502 Odontoglossum odoratum.
6494 Oncidium dasystyle.
6471 Pachystoma? Thomsonianum.
6478 Phyteuma comosum.
6480 Pitcairnia Andreana.
6472 Polygonum affine.
6500 Polygonum amplexicaule.
6476 Polygonum compactum.
6503 Polygonum cuspidatum.
6493 Primula sibirica, *var.* kashmiriana.
6519 Prunus divaricata.
6492 Ribes lacustre.
6479 Rubus phœnicolasius.
6498 Ruellia Portellæ.
6517 Salvia hians.
6526 Scabiosa pterocephala.
6488 Senecio speciosus.
6521 Stelis Brückmülleri.
6508 Stenomesson luteoviride.
6495 Tillandsia Malzinei.
6518 Tulipa biflora—T. iliensis.
6489 Xiphion Kolpakowskianum.
6482 Wahlenbergia tenuifolia.
6531 Wormia Burbidgei.

ERRATA.

In description of Tab. 6500, second page,

Line 8, *for* Kharia, *read* Khasia.

Line 9, *for* Tahurunpore, *read* Sahurunpore.

Line 12, *for* Aitcheson, and, *read* Aitchison and others from Kashmir where.

Footnote, line 2, *for* ovules, *read* ovule.